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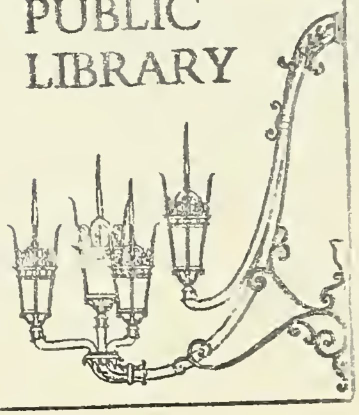

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PERFORMANCE MEASURES FOR MASS TRANSIT SERVICE

AN EVALUATION OF 96 SAMPLE TRIPS ON THE BOSTON COLLEGE BRANCH OF THE MBTA'S GREEN LINE

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PERFORMANCE MEASURES FOR MASS TRANSIT SERVICE

SAMPLE TRIP EVALUATION ON THE GREEN LINE

INTRODUCTION

Transit performance can be measured in several ways. The primary concern for the MBTA in the past 20 years has concentrated on how to stay within the budget -- in effect fiscal performance.

Another concern is the efficiency in the use of buses and trains, such as vehicle-miles per year, energy use, or annualized vehicle cost -- generally termed rolling stock performance.

A third category is service quantity, such as passengers per day or passenger-miles per year.

An extension of service quantity is service quality, which focuses on passenger perceptions of service, such as average trip speed (trip time), service variations (including bunching and reliability against breakdowns). Service quality also could include more qualitative factors such as comfort and safety.

Finally, comparative service quality is determined by comparing service/performance of sampled transit trips with alternate modes, such as cars, bicycles, ridesharing or walking.

A sixth option is not really a performance measurement but represents the appearance of progress -- namely, spin control. A form of public relations or publicity manipulation is applied to press and public perceptions of MBTA performance, bypassing any other images presented by public critiques, the MBTA Advisory Board and ridership advocacy groups such as the Association for Public Transportation or Conservation Law Foundation.

SUMMARY : 6 TYPES OF PERFORMANCE MEASURES

1. Fiscal Performance -- cost efficiencies
2. Rolling Stock Performance -- hourly, daily, or annual
3. Service Quantity -- amount of service provided
4. Service Quality -- passenger perceptions of quality
5. Comparative Service Quality -- other modes (cars, walk, etc)
6. Spin Control -- image manipulation without real measurement

For years, there have been efforts by the MBTA Advisory Board and various management teams to measure fiscal performance. Service quantity has been measured in terms of daily or annual trips and frequency of scheduled trips. The only apparent effort to determine service quality is the monitoring of MBTA "on-time" performance. I am unaware of any studies which review service quality of transit vs. other modes.

================= WEAKNESS OF THE "ON-TIME" TRIP CONCEPT ==========

The MBTA regularly measures the arrival times of buses and trains at the ends of their trips and determines how many trips deviate excessively from an allowable variation around schedules. It is unclear how this process deals with trains which leave the beginning terminal either too early or too late.

The on-time method has five major weaknesses :

1. How should we handle late or early departures at the beginning of the trip?

2. What is the acceptable variation from schedule to still qualify as being "on-time"?

3. Should we allow a simple Automatic credit for as-directed vehicles? (If so, operational snafus can be covered up).

4. How common is the manipulation of the trip schedules (in order to show improved results)?

5. How can we overcome difficulties in the monitoring of performance by the MBTA -- especially asking for data gathering and review by independent evaluators?

Most of these factors focus on the tendencies of MBTA management -- indeed any management -- to present a Rose-Colored-Glasses view of the world. The usual techniques are selecting the most favorable data, setting criteria which will make available data look better, and finally outright fabrication of data.

All government agencies are notorious for presenting only the good news, since the Messenger of Bad News inevitably is the first to meet the hangman. Large private companies have also acquired a legendary history of punishing the Messenger of Bad News.

When the bad news becomes intensely public, it usually becomes politically infeasible to make the Messenger of Bad News into the scapegoat, and instead a new battleground erupts over how we interpret the data.

One of the classic manipulation games occurred in the early 1960s at General Motors. A quality index was set up for various auto plants, with 100 for a perfect score, 95 for a car with 5 defects and so on. But too many plants had trouble getting a "passing" grade of 60. So what solution did GM management come up with? They made 145 a perfect score. That way a car with 40 defects looked just fine and it now took 85 defects to flunk the quality test.

Business Week (Sept. 18, 1989) noted, "Such was the culture of GM. Don't ask how scores could really be improved. Don't ask what poor quality means to customers. Don't even admit that there's a fundamental problem, because nobody likes bad news. Just juggle the numbers."

More recently, a medical doctor in North Carolina was astonished by the claims which logically implied that 90% of America's schools were better than average. The result was an investigation into distortion, manipulation and -- in some cases -- outright cheating by educators in order to increase grade scores. The natural administrative result was denial and scapegoating.

The primary concern of bureaucrats was expressed bluntly but crudely by John Poindexter in his testimony on Iran-Contra : CYA. The main goal is job preservation, not truth or public service.

Do we really expect MBTA management to be better than General Motors or our public schools? Many of our contemporary corporate ills will also be reflected in transit management, and these flaws will be augmented by those special to government bureaucracies.

One evident example of MBTA management playing the general Motors game with schedules on the Riverside branch of the Green Line. Official schedules list this line as offering service at 7-minute headways, but one recent study for a private development showed that actual service on the line occurred on 3.5 minute headways. Under the circumstances, it would be a piece of cake for the MBTA to demonstrate attainment of the 7-minute headway objective. Easy objectives are easily attained.

By focussing on scheduled performance, a clever bureaucrat can relax schedule times and lower the expectations of scheduled service in order to match the actual service achieved. Any transit system can play this game, and this weakness is the primary limitation of current MBTA efforts to assess on-time performance. Excellent performance can be claimed by achieving 100% adherence to mediocrity or less.

It is quite logical to expect that a bureaucracy like the MBTA will naturally tend to slant service data in the most positive light. It is also quite logical to expect that fairness and truth will be casualties in this process. However, there are some limits : outright fabrication of data always runs the risk of exposure, by whistleblowers, the press or the Advisory Board.

Thus we will receive a mix of information from the MBTA, some legitimate and truthful, while other elements are manipulated and distorted. Stonewalling (elaborate stalling tactics) are also vital to the exercise of damage control and hoping that short memories & the press of other local issues will allow any crisis to blow over.

The ridership, general public and Advisory Board are all naturally frustrated by such a situation, because they do not know what or who to believe.

======= THE NEED FOR QUALITY PERFORMANCE MEASUREMENT ===========

Presently, as in most cities, all MBTA trip reporting is initiated and controlled by the operating transit agency itself, with virtually no independent trip measurement. As a result, transit performance is one of the most heavily monopolized and introverted data bases in existence.

There is a pressing need for an independent performance monitoring process for MBTA service, with more extensive data-gathering capabilities. The goal of this monitoring effort should be to gather information on average and peak system performance, and to provide a better understanding of trip variations and train bunching.

We need performance targets and further measurements to determine how well these targets are being achieved. This data must be collected without fear of anyone being the "messenger of bad news". We need a proper independent audit of performance, rather than reliance on MBTA data. This audit should be either passive to the operations of the agency (independent data review and analysis) or involve sampling of active operations. Sampling (rather than blanket monitoring of all trips) would reduce audit costs and the degree of intrusion into daily MBTA operations.

Good sampling helps to reduce the data processing workload and allows greater depth of analysis, rather than a shallow analysis of all trips. It is the standard method of quality analysis in industry, having been fine tuned by Americans like Edwards Deming, exported to Japan and reintroduced to American industry in the past 20 years. As best as I can tell, the MBTA does no analysis of system performance based on trip sampling, although CTPS does engage in spot trip time measurements on an annual basis.

Oddly enough, MBTA trip evaluation appears more substantive on buses, compared to rail. Bus service quality standards were established in 1977 and while not adhered to 100% their existence has at least allowed for some discussion of route performance. Rail performance appears to be much more of a rudderless ship.

One factor which has severely crippled rail operations has been the extensive tunnel and rail work on the various lines. The disruption broke apart the established routine of regular service and temporarily replaced it with a chaotic sequence of less quality service. At the operating level, employees became accustomed to the degraded levels and it was virtually impossible to return to the higher standards of service which existed prior to construction. This loss of excellence is most evident on the Red Line, which used to be the flagship line of the MTA and MBTA.

Another factor undermining rail management integrity was the loss of old-timers at the operating level and chaos in management going back to the 1960s. This downward slide was broken only by the plunge into the horrors of the Barry Locke era and the stuttering partial recovery since 1981 from those depths of iniquity. Recovery of operational performance has also been hampered by the excessive bureaucratic emphasis since the 1970s on MBTA construction, as opposed to operations.

================ BAD TRIPS AND ERRATIC SERVICE ================

The one most common complaint about MBTA transit service is that the train arrivals are so erratic. A good trip on one day can be followed by a very slow trip on the next day. Trains arrive bunched together, and management appears helpless to understand what is happening and how to keep the trains running evenly spaced.

There is a persuasive argument that memories of the worst transit trip tend to overpower memories of the best trips, so that the worst trip has an overwhelming influence on modal choice. The bad trip will have an anti-marketing function, driving people away from transit in droves. Thus, on days when service is excellent, one wonders why the cars aren't more crowded. The answer is that the disaffected are at least subconsciously remembering their bad MBTA trips.

How are trip time and unreliability related, from a ridership viewpoint? If there is steady reliability in trip times of 1/2 hour, riders know the trip will take 1/2-hour. What they expect, they get. There is no cause for anger. But if some trips take 15 minutes and some take 1/2-hour, riders can become accustomed to the 15 minute trip. When they get hit with a 1/2-hour trip, they become late and frustrated. While they may appreciate the faster 15-minute trips, they also become angry at the inability of the system to provide consistent, predictable service.

An interesting academic question is this : would riders prefer a steady reliable 30-minute trip or a 22.5-minute trip composed of equally random 15-minute and 30-minute trips? I suspect that the randomness in trip times would outweigh any improvement in average speed. However, the better focus is on finding ways to maintain reliability of all trips close to the attainable 15-minute performance level.

In order to perform a better job of monitoring MBTA performance, we need both a mechanism and a method. The mechanism would be a new organization called The Ridership Consortium, and the method would be gathering and analysis of sample transit trips.

============== SETTING UP A RIDERSHIP CONSORTIUM ===============

A Ridership Consortium should be formed -- with a mandate to measure, report on and make recommendations for improvement in MBTA transit performance. The Consortium would be made up of groups such as the Association for Public Transportation, the Boston and Cambridge Chambers of Commerce, the Central Transportation Planning Staff, MBTA Advisory Board, and citizen volunteers. The Ridership Consortium would report to both the general public and the MBTA. It would take no direction from the MBTA or anyone else, except from its mandate to report on MBTA transit performance.

None of its activities would require the approval of another body, such as the MBTA, EOTC or the Legislature. There would be room for both minority member reports and a separate report from MBTA management.

In terms of priorities, the initial focus should be on rail operations, especially the Red and Green Lines. Later efforts could track the performance of other rapid transit lines, buses and commuter rail.

=========== FUNCTIONS OF THE RIDERSHIP CONSORTIUM =============

The Ridership Consortium would serve as a clearing house for trip time data collected by group members. The data would be submitted in a standard format with special commentary, and would be analyzed on a sampled basis.

The goal would be to identify important trip routes and riders who would volunteer to report sampled trip times, generally as part of regular commuting trips. Where funds and staff permit, sampled surveys of train arrivals/departures at terminals and at Park Street should be performed on a weekly basis.

Suitable sampling frequency would be about 1 trip a week for most runs, or 50 trips a year. A few heavily traveled routes could merit 2-3 trips per week, and this data could be obtained by more frequent reporting or overlapping of sample commuting routes.

Processing and printing each sample trip might take about 1 hour, so the sampling should be performed with care and recognition of time/staff/funding limits.

================== SAMPLING PROCEDURES ======================

Riders would fill out pre-printed 3x5 data cards for station start/stop times and train loadings. Special notes (delays, headways of trains in front, etc.) would be added on the reverse side of the reporting form.

Riders would send in their data cards by mail. All times and comments would be typed into a data analysis spreadsheet, which would be available for public review. The spreadsheet would include calculations of incremental trip times, speeds and levels of service. Further calculations would be made of trip efficiencies and statistical variations -- as part of a larger spread sheet and data base of all sampled trips.

============== THE TRANSIT LEVEL-OF-SERVICE ANALOGY =============

A rating system is needed to evaluate the excellence of service for a transit trip (or lack thereof). The concept of a transit level of service is analogous to the traffic level of service defined by traffic engineers. It is intended to reflect the quality of the transit trip as measured by trip time. Traffic LOS is often defined by speed or delay, so transit LOS is reflected in trip time.

Clearly, transit level-of-service does not tell the whole story, since ideal LOS conditions are usually achieved during the off-peak when there are fewer riders. Moreover, factors such as comfort and safety are not taken into consideration in LOS. While we recognize that no measurement is complete, the LOS concept remains very valuable as a means of assessing the efficiency of transit service.

Highway traffic Level of Service is modeled after school grades, ranging from A for excellent to F for failure. LOS A represents an achievable off-peak ideal, while LOS C as a good target for urban conditions, and LOS E as capacity. LOS F represents heavy congestion and delays, and might be defined as "intolerable" conditions. The same standards should be applied to transit.

Both highways and transit deliver the best quality service when the system is underutilized. LOS A for transit is the best trip possible in peak or off-peak. An LOS F transit trip would represent a clear condition of degraded capacity and intolerable performance.

For purposes of setting an attainable ideal, the best transit trip is defined as a composite of all the best individual station-to-station link times. The pieces of the trip are real and actually occurred; the ideal trip is a fictional combination of these pieces. The actual best trip may be 85-90% of this composite best trip.

The best trip represents the empirical potential of the system, not a theoretical analysis. It is a pure LOS A standard against which all other trips are compared.

It should be noted that as new data comes in, the time for the best trip may be reduced. If a train makes a link time which is a new record, it receives an LOS A+ for the link and the best trip data are updated. As the trip data base grows, the frequency of any such change diminishes. During the first 6 months of data gathering, weekly updates on best trip times should be circulated, with computer templates revised at all information processing locations. Summary reports should be issued at 3 months and 6 months and every 6 months thereafter.

Variations in service will be reflected in different trip times along the same route. The basic measurement is that of Lost Time, which is the amount of extra time used, compared to the fastest or best trip time. Any trip will vary from the best links and dwells by the Lost Time, which becomes the difference between the measured time on the trip and the best time for any dwell or link. For example, if the best trip between two stations was 90 seconds, and the sample trip took 125 seconds, the lost time would be 35 seconds.

=============== LINK vs. DWELL LEVELS OF SERVICE ================

We are all familiar with the degradation of transit service during peak hours, as trains become crowded and loading periods are longer. We would expect the loading or dwell periods to be much longer during crowded peak hours, while the link times for travel between the stations should only be reduced slightly. Theoretically, we would expect link travel times to be reduced marginally, proportional to the extra weight of the passengers. In actual practice, the variations in link times are quite large.

Because of the different impacts of peak hour crowding on dwell and link times, we will need different LOS standards for link and dwell, as discussed in the next section.

================ DEFINING TRANSIT "LOS F" ===================

For transit, intolerable link delays define LOS F as the point at which the lost time equals the best time. In other words, LOS F means that the link travel time is actually double the best time.

This definition is somewhat arbitrary but reasonable. It says that service becomes unacceptable when speeds drop by 50 %, or when travel times double. Most riders would describe a doubling of trip time as a "bad" or "unacceptable" trip clearly worth complaining about, although others could complain that this standard is too tolerant and even small variations in trip times make service intolerable.

As measurements will show, these more tolerant standards show numerous occurrences of LOS F during regular operations. A stricter standard would simply reduce almost all trips to LOS F and would not be very useful as distinguishing among moderately inefficient trips.

We do have the option of setting LOS targets which are better than LOS F, such as LOS B or LOS C. A good transit system should seek to operate at a level which is targeted towards quality professional standards and not allow itself to sink to a level which operates barely above the point at which the ridership is in revolt.

One example of setting a professional standard is to define our lowest acceptable expectation as a trip which takes 50% longer than the best composite trip. Such a goal would represent LOS C.

The advantage with the LOS standard proposed is that it allows for separate standards for different critics : LOS F, LOS D, LOS C and so forth. It also allows for incremental goal setting, such as aiming for 85% of all trips as being LOS E or better.

With LOS A reflecting best measured time and LOS F meaning link times twice the best measured time, the transit link levels-of-service A through F are be defined as in Table 1.

The two additional categories of LOS F- and LOS F= are intended to reflect even worse performance conditions, and correct for a flaw in traffic LOS definitions which implies that once conditions reach LOS F they cannot get any worse. Indeed, with transit there may be some cases of severe breakdown where an LOS rating of "F-10-minus..." might be justified.

The distinction between link and dwell LOS is made as follows. It appears reasonable to allow a degradation in dwell LOS to occur at only half the rate of link LOS. In effect, dwell time would have to grow to three times the best dwell time to achieve LOS F. This criterion is adequate for now, but may be too inflexible for those cases where an off-peak stop is represented by a quick opening and closing of the doors.

TABLE 1 LINK AND DWELL LEVELS OF SERVICE

>>>>>>>> L I N K <<<<<<<<<			>>>>>>> D W E L L <<<<<<<<<		
Lost time / Best Time		LOS	Lost time / Best Time		LOS
0.0 to 0.2	.. -> ..	A	0.0 to 0.4	.. -> ..	A
0.2 to 0.4	.. -> ..	B	0.4 to 0.8	.. -> ..	B
0.4 to 0.6	.. -> ..	C	0.8 to 1.2	.. -> ..	C
0.6 to 0.8	.. -> ..	D	1.2 to 1.6	.. -> ..	D
0.8 to 1.0	.. -> ..	E	1.6 to 2.0	.. -> ..	E
1.0 to 1.2	.. -> ..	F	2.0 to 2.4	.. -> ..	F
1.2 to 1.5	.. -> ..	F-	2.4 to 3.0	.. -> ..	F-
1.5 or more	.. -> ..	F=	3.0 or more	.. -> ..	F=

================= TRANSIT TRIP PRODUCTIVITY =====================

Managers and engineers tend to measure their success in riders per hour or day, while customers show concern for a speedy, consistent trip. Capacity is of interest to managers, while speed is of interest to passengers. Clearly, what we have are two goals -- ridership and speed.

An ideal performance measure should be a combination of the two -- ridership and speed. We would be seeking the dual goals of moving more people at higher average speeds. We would be balancing the twin objectives of speed and loading.

Obviously, one could have fast moving trains which were empty, -- and they would provide insignificant transit service. Similarly, one could have jammed but slow moving trains -- which also represents poor service. Maximum performance would result from trains which are both fast and fully loaded. Ideally, riders would like performance which was slightly less than fully loaded, in the interests of comfort.

One author (*) has identified "Productive Capacity" as the product of the capacity and operating speed, and describes it as "A good composite representation of transit system performance." (This factor has also been termed "Transit Line Productivity when capacity is measured by the number of vehicles operated on the line or alternately the number of seats or passengers.)

Productive Capacity sounds useful, but as a measurement is carries the units of Riders x distance / time-squared. Such awkward units are very difficult to understand. We must do better.

================== RIDERSHIP EFFICIENCY ====================

Our best measure of efficiency remains the Productive Capacity Ratio, expressed as a percentage. For simplicity, let us call it Ridership Efficiency, because the focus is on the riders -- how many of them are served and how fast they are moved.

Ridership Efficiency becomes the percentage of maximum train loading multiplied by the percentage of the best measured speed. For example, a train that is 50% loaded and traveling at only 50% of the best-speed-ever-measured would represent a Ridership Efficiency of 25%. A train which is only 10% loaded while traveling in record time has a Ridership efficiency of only 10%.

V. Vuchic, Urban Public Transportation, Prentice Hall, 1981 p. 520

TABLE 2 DEFINITION OF RIDERSHIP EFFICIENCY

$$\text{RIDERSHIP EFFICIENCY} = \frac{\text{Train Loading}}{\text{100\% maximum}} \times \frac{\text{Trip Speed}}{\text{Best Speed}}$$

EFFICIENCY AND EFFECTIVENESS

A distinction must be made between "efficiency" and "effectiveness". Efficiency tends to be an engineering term which measures how well input efforts yield output results. Effectiveness also evaluates the impact of transit service on societal goals. In a simplistic way, efficiency means "doing things right", while effectiveness means "doing the right thing."

There has been an unfortunately association of "efficiency" with conservatives, especially right-wing managers who would cold-heartedly cut out services because they were not judged to be "efficient". Similarly, Liberals have been more associated with effectiveness, at least in the sense of tieing government actions to more diffuse societal goals such as social justice. However, the use of transit efficiency to measure system performance would appear to meet the goals of liberals for good and fair mass transit service, while achieving conservative's objectives of minimizing waste and bumbling in operations.

USING EFFICIENCIES TO TARGET SERVICE GOALS

The total trip is composed of the sum of the individual link and dwell times. A typical MBTA trip will often show better performance on some links or dwells than on others. Some parts of a trip may get LOS B or C service while other sections limp in at LOS E or F. A logical question is to seek ways of bringing all links and dwells up to LOS B or C -- by improving on the "bad" parts of the trip. We can simulate the results of such efforts by doing "What-If?" analysis on the computer with all links and dwells improved to LOS B or C.

The actual implementation methods may be much more complex, such as identifying lagging trains and expediting them to catch up with the train in front. Left unattended, such lagging could produce severe line instability, with long gap headways followed by closely bunched trains, with the critical lead train overloaded and bumbling along at LOS F. In some cases, the lagging may be caused by equipment problems or surge loads from other intersecting transit lines. Too often, the lagging is due to poor management or union sabotage caused by whatever may be the discontents of the day.

The scenario would be to identify lagging trains early while the lengthened headways were still manageable. In this way line stability could be assured and LOS F for links need only be a rare emergency occurrence. Because any improvements would necessarily be gradual, we can set up targets of insuring LOS D service on all links, then we can seek LOS C or better as earlier goals are achieved.

Setting goals of LOS B or LOS C would allow for promising performance goals to the public. Years ago, this was done in the form of signs which promised "10 minutes to Park Street" or "12 minutes to Summer Street". Unfortunately, these signs were removed by MBTA management as part of station "modernization" and no similar service commitments have been advertised in recent years.

A more complex series of guidelines could appear in a combination of objectives :

* No more than 1% of the trips should be LOS E or worse
* No more than 10% of the trips should be LOS D or worse
* No more than 30% of the trips should be LOS C or worse

As with all objectives, we can take sample trips and assess the results of "What-If?" limits on the frequency of bad trips.

======== SAMPLING PROCEDURES TO MEASURE SPEED AND TIMES ==========

We know we can measure speed and travel times, and thereby establish Levels of Service for individual trips. But how many trips need to be measured? How frequently should trains be sampled, and how can the data be used to represent individual trips, line performance or system performance?

There are two general types of field measurement : the fixed observer and the moving observer.

...... THE FIXED OBSERVER

The fixed observer stands at a platform and records the arrival time of each train, as well as a visual estimate of loading. The number of units is also recorded, so a fairly complete log of trains and riders past a fixed point is kept for up to a 2-hour period.

Unfortunately, there are no measurements of speed or any recording of service at other points along the line.

...... THE MOVING OBSERVER METHOD

A moving observer can measure speed and ridership (loading) by riding along in the train and observing the stop/start times and the number of riders. Other than spot observations at the beginning and end of trip, there are no records of headways.

For the line as a whole, we need both moving and fixed observers, with speed and loading variations predominantly the responsibility of the moving observer, while the fixed observer records train frequency of the trains and loading variations between train units. For the Green Line, this observer would best be located at Park Street.

The fixed observer can also report on train loadings, but the observations tend to be very hurried because of the short time available to estimate train loading as a train speeds by.

Ideally, line performance would be a combination of headways measured at beginning, middle and end of the line by fixed observers, with speed and ridership estimates coming from a large percentage of sampled trips by moving observers..

For example, a peak hour sampling of 2 riders on each of the four Green Line branches would yield 8 sample trips per hour in the Park to Copley tunnel. With trains operating about one a minute in the peak, such a sample would represent about 15% of all trips. However, the moving rider would be recording loadings for only one of possibly two or more LRV units. Speed sampling would be 15%, but load sampling would be 8% or less.

These sampling estimates suggest the desirability of having two sampling riders per train. Their results would reflect any unbalanced loadings between front and rear of the train, and the record of stop/start times would serve as a check on each other's data accuracy.

With trip sampling occurring an average of 2 days a week, each observer would produce 100 sampled 2-way trip records per year. A rate of 50 trip records each way over the year should serve as an adequate annual line summary of performance. As the MBTA begins to get a better handle on erratic trip performance and service evenness improves, the frequency of trip sampling can be reduced.

========== BEGINNING THE SAMPLING OF 96 GREEN LINE TRIPS ========

This report includes 96 sample trips on the outbound Boston College line, covering the route between Park Street and Boston University Central.

The data form was designed to permit comparison of trip times for different modes, including door-to-door walking times. This format allows one to compare transit vs. car vs. bicycle, etc. However, the original walking times were recorded to Government Center, so the full modal comparison capabilities of the data sheet have yet to be utilized.

The trip path from Park Street to B.U. Central, as well as connections to Government Center and walking to Cambridgeport are shown in the map (Figure 1).

TABLE 3 TRANSIT TRIP OBSERVATIONS AND RECORDED DATA
Made for 96 Sampled Trips

1. Date and time of day
2. Headways of trains arriving during platform wait period
3. Type of train and number of cars
4. Stop and Start times at each station
5. Estimated car loadings leaving each stop : # of seats full and # of standees (for half of LRV unit)
6. Special incidents, breakdowns etc.
7. Bunching of LRVs (train headways at B.U. Bridge)

=================== HOW MEASUREMENTS WERE MADE ==================

All 96 trips were recorded by the author, riding the Boston College outbound line between 1977 and 1990. Usually, a 3x5 card was sufficient to record the station names, the stops and start times, and the observed car loading.

Except for the very first trip, made in 1977, all trips were made utilizing a digital wrist watch (hr/min/sec) and recording a visual passenger count. Standees were counted up to about 20, and thereafter an estimate was made of the percentage of maximum standees -- as determined by jammed stairwells and aisles lined two passengers across. On many occasions, the trains were effectively jammed to capacity at the door wells, while standing room was still available in the aisles at the center of the train. This available standing room was inaccessible, so the train was effectively "full" or at capacity.

Some trains recorded as 90-95% full in terms of available floor space for standees were incapable of accepting any more riders. In some instances, standees distributed themselves better, with less crowding around the doors. This situation means that the "maximum capacity" of a transit car varies slightly, depending upon how evenly distributed the standees are throughout the car.

Stop and start times were determined by train lurching, not door opening and closing. Usually, doors opened almost immediately after the lurch, but there were numerous times when the doors closed, but the train did not move out. A typical example is waiting for traffic signals to change on Commonwealth Avenue.

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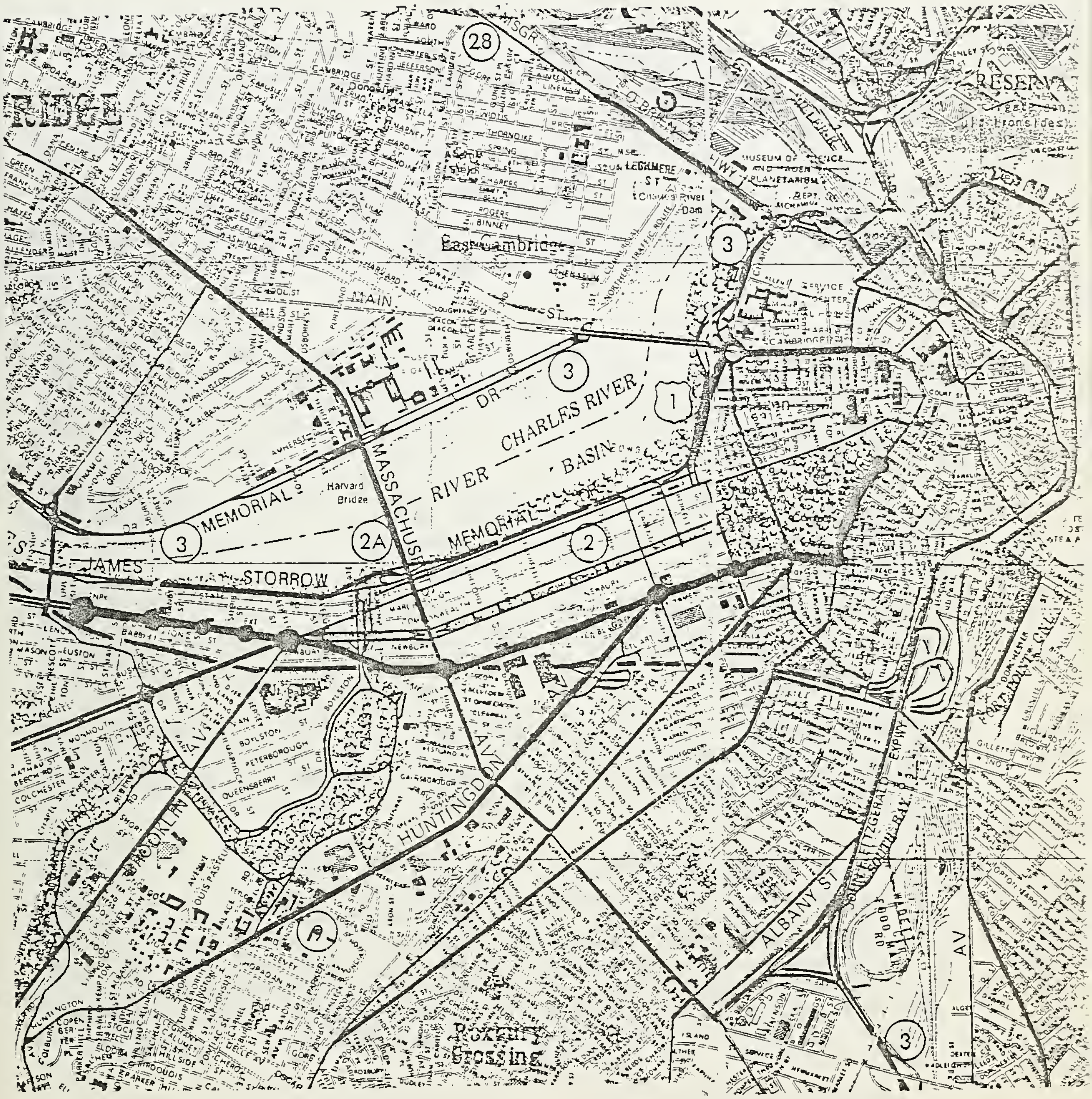


FIGURE 1 - ROUTE MAP FOR 96 GREEN LINE TRIPS

================= TRANSCRIBING OF TRIP DATA ===================

My initial efforts to develop a tally sheet began in August 1981, using a word processor. By April 1985, the first efforts to develop a spreadsheet version were begun, using SuperCalc on a 64K Zenith Z-89 CP/M computer. Memory limits hampered the analysis.

By December 1987, hardware and software were switched to IBM-compatible. Since 1988, a shareware program (ExpressCalc) has been employed to create a 1-sheet spreadsheet template labeled "TRAINMASTER" (75K) to record each trip's data, while a cumulative summary sheet of 350K contained columnar summaries of all 96 trips.

Input data included trip date, PCC or LRV (Boeing-Vertol or Type 7), number of train units, the in-and-out times at stations, the number of seats occupied and the % of maximum standees. All other data was either fixed data in the spreadsheet (such as station spacing) or calculations such as link times, speeds, LOS and efficiencies.

Initially, the base spreadsheet required frequent updating for the best & worst times for links and dwells. After 96 trips, the occurrence of record times is infrequent and the forms have stabilized.

After each trip sheet was printed, the data on link/dwell times and total loadings were typed into the summary sheet listing all 96 trips. Average, maximum and minimum speeds and dwell times were calculated.

From the summary sheet information, trip time data were rearranged to show speeds by time of day. A bar-graph representation was used to show speeds, loading and efficiencies for each trip, utilizing the shareware graphing program, ExpressGraph.

========== RESULTS : SAMPLED DOOR-TO-DOOR TRAVEL TIMES ==========

About 6 of the total 96 trips included transit times between Government Center and Boston University West, as well as walking times from 100 Cambridge Street to Government Center and from B.U.West to Hamilton Street in Cambridge. These very specific trip destinations now allowed for a small-sample modal comparison of door-to-door travel times. For the Green Line, trip times varied between 35 and 65 minutes.

About half a dozen Red Line trips were made as well, with a range of 25-45 minutes door-to-door. Bicycle trips varied primarily by weather and headwind conditions (15-25 minutes). The fastest trips were made by motorcycle, only 15 minutes or less, while car travel entailed about a 5 minute penalty for congestion and a high parking fee. Based on my walking speed to and from the Green Line, I estimate the time to walk the entire distance door-to-door (about 3 miles) as 55-65 minutes (see Table 4).

TABLE 4 SAMPLE TRAVEL TIMES, DOOR-TO-DOOR
(Downtown Boston to Cambridgeport)

1. Average Green Line Trip	35-65 minutes
2. Average Red Line Trip	25-45 minutes
3. Travel by bicycle	15-25 minutes
4. Travel by motorcycle	13-15 minutes
5. Walk entire route	55-65 minutes
6. Drive and Park (automobile)	15-25 minutes

============= RESULTS OF 96 SAMPLED GREEN LINE TRIPS ============

Table 5 includes a listing of all 96 trips, with date and time of day, as well as any special incidents such as express operations or breakdowns. The average trip speed is shown both as an average MPH and as a percentage of the best trip speed (17.6 MPH).

We should be interested in how much speeds vary and why. Speed variations may be due to several factors :

** Time of day and by implication loading

** Average headways and equipment availability

** Breakdowns or human decisionmaking errors

** Variations in operator skills, experience or motivation/morale

** Innocent ignorance of system operations

** Sabotage by employees (management or carmen)

These factors are not listed in order of any real priority, but simply in typical order that MBTA management is prepared to discuss publicly. The common excuse that the system is "busy" does not explain the erratic performance noted in the trip sample, nor can breakdowns explain the bunching of trains.

In truth, several of these factors may be occurring at any one time -- what some people call "multivariables." Indeed, on bad days it is conceivable for every factor to be at play.

The best place to begin is at the top of the list above, the time and loading factors and determine how much this factor influences performance levels.

TABLE 5. Listing of 96 Sampled Trips -- Boston College Outbound
(Time leaving Park Street; Average Speed to B.U. East)

#	DATE	TIME	Comment	SPEED,	% of best
1.	Oct. 26, 1977	4:30 PM	(No Ridership notes)	9.3 MPH	53%
2.	July 28, 1981	5:40 PM	....	4.8 MPH	27%
3.	Aug. 24, 1981	6:00 PM	....	11.8 MPH	67%
4.	Sept. 21, 1981	2:00 PM	....	14.5 MPH	82%
5.	Oct. 5, 1981	8:00 PM	....	12.5 MPH	71%
6.	Oct. 13, 1981	3:45 PM	....	11.4 MPH	65%
7.	Nov. 2, 1981	3:20 PM	....	11.1 MPH	63%
8.	Nov. 4, 1981	2:55 PM	....	7.8 MPH	44%
9.	Dec. 30, 1981	4:50 PM	....	8.6 MPH	49%
10.	Jan. 5, 1982	5:25 PM	....	11.4 MPH	65%
11.	Jan. 12, 1982	6:25 PM	....	10.5 MPH	60%
12.	Jan. 27, 1982	8:15 PM	BU East & W.bypassed	11.5 MPH	65%
13.	March 11, 1982	2:20 PM	....	9.9 MPH	56%
14.	March 19, 1982	2:00 PM	....	10.6 MPH	60%
15.	April 12, 1982	8:30 PM	....	12.1 MPH	69%
16.	April 13, 1982	4:50 PM	....	8.6 MPH	49%
17.	April 14, 1982	5:25 PM	Bad Wheel,all off at	5.7 MPH	32%
18.	May 24, 1982	5:20 PM	..... Kenmore	12.2 MPH	69%
19.	June 7, 1982	4:20 PM	....	10.4 MPH	59%
20.	Oct. 26, 1982	5:30 PM	....	8.9 MPH	51%
21.	Oct. 29, 1982	3:10 PM	....	13.0 MPH	74%
22.	Jan. 17, 1983	5:40 PM	Breakdown at Haymkt.	6.1 MPH	35%
23.	April 29, 1983	8:20 PM	Bypass B.U. West	12.0 MPH	68%
24.	June 3, 1983	4:10 PM	....	12.7 MPH	72%
25.	April 16, 1985	6:30 PM	....	6.6 MPH	38%
26.	April 23, 1985	4:45 PM	Express to Brighton,	9.6 MPH	55%
27.	April 29, 1985	2:25 PM	..... chg.@B.U.E.	8.8 MPH	50%
28.	Aug. 26, 1985	6:15 PM	....	9.5 MPH	54%
29.	Jan. 30, 1986	4:50 PM	....	8.3 MPH	47%
30.	Jan. 31, 1986	5:25 PM	....	9.1 MPH	52%
31.	Feb. 3, 1986	6:50 PM	....	11.8 MPH	67%
32.	Feb. 5, 1986	6:50 PM	Breakdown at Kenmore	4.8 MPH	27%
33.	Feb. 7, 1986	4:20 PM	....	9.4 MPH	53%
34.	Feb. 10, 1986	3:15 PM	Express Park-Kenmore	10.0 MPH	57%
35.	Feb. 12, 1986	5:50 PM	....	8.5 MPH	48%
36.	Feb. 25, 1986	5:50 PM	....	8.8 MPH	50%
37.	Feb. 26, 1986	5:50 PM	....	10.3 MPH	59%
38.	March 4, 1986	5:00 PM	....	9.5 MPH	54%
39.	March 14, 1986	5:55 PM	....	7.8 MPH	44%
40.	April 7, 1986	5:25 PM	....	9.2 MPH	52%
41.	April 11, 1986	5:15 PM	Express to Brighton;	8.4 MPH	48%
42.	Aug. 14, 1986	5:40 PM	..... chg.@Kenmore	11.7 MPH	66%
43.	Aug. 18, 1986	1:00 PM	....	13.1 MPH	74%
44.	Sept. 10, 1986	5:30 PM	Express to Brighton	8.7 MPH	49%
45.	Sept. 17, 1986	5:20 PM	..... chg.@Kenmore	7.7 MPH	44%
46.	Oct. 13, 1986	2:10 PM	....	12.8 MPH	73%
47.	Nov. 26, 1986	5:15 PM	....	7.6 MPH	43%
48.	Dec. 9, 1986	10:50 PM	....	14.7 MPH	84%
49.	Dec. 15, 1986	10:45 PM	....	13.2 MPH	75%
50.	Jan. 26, 1987	10:40 PM	....	15.8 MPH	90%

TABLE 5 (continued) 96 Sampled Trips -- Boston College Outbound
(Time leaving Park Street; Average Speed to B.U. East)

51.	Jan. 29, 1987	Midnight	....	17.6 MPH	100%
52.	Feb. 4, 1987	8:00 PM	....	12.6 MPH	72%
53.	April 17, 1987	8:00 PM	....	10.5 MPH	60%
54.	June 8, 1987	4:30 PM	....	11.2 MPH	64%
55.	Jan. 4, 1988	7:00 PM	....	10.4 MPH	59%
56.	Jan. 20, 1988	5:30 PM	....	5.8 MPH	33%
57.	Feb. 4, 1988	5:05 PM	Light snow ending	10.0 MPH	57%
58.	Feb. 18, 1988	4:55 PM	....	11.1 MPH	63%
59.	March 24, 1988	5:05 PM	....	10.1 MPH	57%
60.	April 4, 1988	5:50 PM	....	10.9 MPH	62%
61.	May 12, 1988	2:05 PM	..... Park-Kenmr	11.9 MPH	68%
62.	May 18, 1988	5:20 PM	Prior BC LRV express	11.2 MPH	64%
63.	May 23, 1988	5:50 PM	4 BC LRVs bunched	9.0 MPH	51%
64.	June 9, 1988	5:10 PM	....	10.5 MPH	60%
65.	July 8, 1988	5:50 PM	....	11.0 MPH	63%
66.	August 2, 1988	9:35 PM	Skipped BUE,BUC,+BUW	13.3 MPH	76%
67.	Aug. 10, 1988	5:40 PM	....	10.6 MPH	60%
68.	Aug. 17, 1988	5:10 PM	Air Conditng. kaput	10.0 MPH	57%
69.	Sept. 15, 1988	6:20 PM	Eve.game at Fenway	9.3 MPH	53%
70.	Sept. 19, 1988	4:55 PM	....	10.3 MPH	59%
71.	Sept. 29, 1988	5:05 PM	....	11.2 MPH	64%
72.	Oct. 20, 1988	4:00 PM	....	10.2 MPH	58%
73.	Oct. 26, 1988	6:10 PM	....	11.8.MPH	67%
74.	Nov. 18, 1988	1:30 PM	....	9.1 MPH	52%
75.	Dec. 8, 1988	3:50 PM	....	10.3 MPH	59%
76.	Dec. 12, 1988	7:30 PM	First trip on Type 7	12.5 MPH	71%
77.	Dec. 30, 1988	8:10 PM	....	14.8 MPH	84%
78.	Jan. 11, 1989	5:30 PM	LRV separated @Bland-	9.6 MPH	55%
79.	Jan. 12, 1989	2:20 PM	..... ford	10.2 MPH	58%
80.	Jan. 27, 1989	5:20 PM	....	11.0 MPH	63%
81.	Feb. 28, 1989	6:20 PM	....	11.8 MPH	67%
82.	March 1, 1989	6:00 PM	4 BC trains bunched	8.7 MPH	49%
83.	March 15, 1989	5:55 PM	....	10.1 MPH	57%
84.	March 16, 1989	4:00 PM	....	11.3 MPH	64%
85.	March 21, 1989	1:30 PM	....	12.6 MPH	72%
86.	March 29, 1989	5:00 PM	....	10.8 MPH	61%
87.	April 12, 1989	6:10 PM	....	11.7 MPH	66%
88.	April 14, 1989	3:00 PM	....	12.5 MPH	71%
89.	June 13, 1989	6:15 PM	....	11.8 MPH	67%
90.	June 21, 1989	6:05 PM	....	10.0 MPH	57%
91.	August 9, 1989	4:30 PM	Breakdown at BU.Cent	7.6 MPH	43%
92.	Dec. 1, 1989	5:25 PM	BC car wrong turn at	4.3 MPH	24%
93.	Feb. 21, 1990	5:45 PM	..... Kenmore	9.8 MPH	56%
94.	June 4, 1990	4:45 PM	....	10.4 MPH	59%
95.	June 14, 1990	7:00 PM	....	14.5 MPH	82%
96.	June 21, 1990	5:50 PM	....	12.9 MPH	73%

THE BEST AND THE WORST

One of the first results from this 96-trip sample is the range of best & worst times for dwells, links and total trips. This range reveals the best news -- what the achievable potential is the system is -- as well as the bad news -- how often service collapses into the pits. The potential provides us with a target for future goals, while the worst trips provide an immediate target for improvement. Tables 6 & 7 illustrate when the best and worst dwells occurred and the extent of the spread. This listing excludes any breakdown or operating change which forced me to get off the train (see Table 8).

TABLE 6 BEST AND WORST DWELL TIMES (All PM Trips)

DWELL...DWELL	TIME OF TRIP	BEST	TIME OF TRIP PM	WORST
Park Street	Dec.30'88, 8:10	14 sec.	Jan.17'88, 5:40	131 sec.
Boylston ′	Jan.29'87, Midn.	10 sec.	Mar. 4'86, 5:00	42 sec.
	May 12'88, 2:05	10 sec.		
Arlington	Dec.30'88, 8:10	9 sec.	Jan.17'83, 5:40	66 sec.
Copley Sq.	Dec.30'88, 8:10	11 sec.	Apr.14'82, 5:25	112*sec.
Auditorium	Aug.18'86, 1:00	9 sec.	Apr.14'82, 5:25	85*sec.
Kenmore Sq.	Dec.30'88, 8:10	10 sec.	Apr.11'86, 5:15	208 sec.
Blandford	Mar.21'89, 1:30	5 sec.	Jan.11'89, 5:30	147 sec.
Bost.U.East	Dec.30'81, 4:50	8 sec.	Apr.23'85, 4:45	180 sec.
Bost.U.Cent.	Jan.29'87, Midn.	8 sec.	Jan.17'83, 5:40	73 sec.
TOTAL DWELL TIME :	BEST	83 sec.	WORST	1021 sec.

* Note : The April 14, 1982 long dwells were followed by a complete breakdown with passenger transfer at Kenmore

TABLE 7 BEST AND WORST LINK TIMES (All P.M. Trips)

.LINK...LINK.	TIME OF TRIP	BEST	TIME OF TRIP	WORST
Park/Boylston	Jan.26'87 10:42	42 sec.	Apr.16'85 6:30	202 sec
Boylston/Arl.	Jan.17'83 5:40	56 sec.	Apr.16'85 6:30	260 sec
Arl./Copley	Jan.29'87 Midn.	44 sec.	July28'81 5:40	740 sec
Copley/Audit.	Jan.29'87 Midn.	75 sec.	July28'81 5:40	225 sec
Audit/Kenmore	Mar.19'82 2:00	51 sec.	Jan.17'83 5:40	315 sec
Kenmore/Bland.	May 12'88 2:05	37 sec.	Mar. 4'86 5:00	98 sec
Blandford/BUE	Sept21'81 =2:00 (12/30/81=4:50;1/26/87=10:40)	39 sec.	Jan.20'88 5:30	154 sec
BU East/Centr	Jan.27'82 8:15	21 sec.	Apr.25'85 2:25 Aug.25'85 6:15	=178 sec
TOTAL LINK TIME :	BEST	365 sec.	WORST	2221 sec.

TABLE 8 "FAILURE" TRIPS ON THE BOSTON COLLEGE LINE

* January 27, 1982	8:15 PM	2 stops skipped
* April 14, 1982	5:25 PM	Major breakdown at Kenmore
* April 29, 1983	8:20 PM	1 stop skipped
* April 23, 1985	4:45 PM	Express to Brighton from B.U.East
* February 5, 1986	6:50 PM	Major breakdown at Kenmore
* April 11, 1986	5:15 PM	Express to Brighton from Kenmore
* Sept. 10, 1986	5:30 PM	Express to Brighton from Kenmore
* August 2, 1988	9:35 PM	Unannounced express past 3 Commonwealth Avenue stops
* August 9, 1989	4:30 PM	Major breakdown at B.U. East
* December 1, 1989	5:25 PM	Train ended up on wrong track track at Kenmore; everyone off

Total 10 failure trips or 10% of 96 sample Boston College trips

.... COMPOSITE TRIP "BESTS AND WORSTS"

From Tables 6 and 7 above, one can create "composite trips" as a combination of all the best or worst individual trip segments. These theoretical composite trips can be compared with actual best trip performance for all trips or for rush hour trips.

The composite best trips are assigned a grade or rating of 100% and all actual trips are rated on a scale from 0% to 100% of best. The best composite trips are shown in Table 9.

TABLE 9 COMPOSITE TRIP, BEST ACTUAL TRIP, +@ RUSH HOUR

	BEST COMPOSITE	BEST ACTUAL	5-6 PM BEST RUSH HOUR
* DWELL time	83 seconds	91 seconds (91%)	169 sec (49%)
* LINK time	365 seconds	403 seconds (91%)	474 sec (77%)
* TRIP time	440 seconds**	515 seconds (85%)	750 sec (59%)
* TRIP SPEED	20.8 MPH	17.6 MPH (85%)	12.2 MPH (59%)

	WORST COMPOSITE	WORST ACTUAL
* DWELL time	1021 sec. (8%)	758 seconds (11%)
* LINK time	2221 seconds	1540 seconds (24%)
* TRIP time	3242 seconds	1915 seconds (23%)
* TRIP SPEED	2.8 MPH	4.3 MPH

(Note ** : Actual trips include only part of the dwell times at Park and B.U. Central. For simplicity of calculation, assume all dwell time occurs at Park ("instant on") and none of the dwell time at B.U. Central ("instant off").

.... BEST AND WORST DWELL TIMES

Consider the example of an excellent peak hour dwell performance : the 5:05 PM trip of February 4, 1988, which had an average station dwell of only 19 seconds. The train was only about 1/3 loaded, and the lengthy link times suggest that it was near the end of a bunched train group.

The longest average dwell time for a non-breakdown trip was 84 seconds (758 sec. total) on Jan. 17, 1983 at 5:40 PM, while February 5, 1986 at 6:50 PM had a total dwell of 78 seconds (704 second total). The worst breakdown dwell includes the platform time waiting for the next train to arrive : December 1, 1989 at 5:25, with 1396 seconds total or 155 seconds of average station dwell.

TABLE 10 BEST AND WORST ACTUAL TRIP DWELL vs. COMPOSITE DWELL TIMES

Rank :				
# 0.	Composite Best Trip Dwell, 8 stops		83 sec.	100 %
# 1.	December 30, 1988	8:10 PM	91 sec.	91 %
# 2.	August 18, 1986	1:00 PM	117 sec.	71 %
# 3.	January 26, 1987	10:40 PM	118 sec.	70 %
# 4.	January 29, 1987	Midnight	120 sec.	69 %
# 5.	February 4, 1987	8:00 PM	145 sec.	57 %
. . .	. . . .	. . . .	. . . .	. . .
# 92.	November 4, 1981	2:55 PM	477 sec.	17 %
# 93.	September 10, 1986	5:30 PM	511 sec.	16 %
# 94.	April 11, 1986	5:10 PM	572 sec.	15 %
# 95.	February 5, 1986	6:50 PM	704 sec.	12 %
# 96.	January 17, 1983	5:40 PM	758 sec.	11 %
# 00.	Composite Worst Trip Dwell......		1021 sec.	8 %

.... BEST AND WORST LINK TIME TOTALS

The January 29, 1987 midnight ride provided some sense of the Green Line capability. Clearly, the motorman was nearing the end of his shift and was "putting the hammer down" to finish the run. With no management directives or union rules to interfere with the efficient completion of his tasks, he reeled off a total trip which was 91% of the composite best trip, setting two dwell time records and two link time records in the process.

The July 28, 1981 trip had a link speed rating of only 24%. This means that the link travel time was four times the composite time, and also 3.8 times longer than the fastest record link time of January 29, 1987. (see Table 11, next page)

TABLE 11 BEST AND WORST ACTUAL TRIP LINK TIMES vs. COMPOSITE LINK TIMES

Rank :			
# 0.	Composite Best Trip Link Time...	365 sec.	100 %
1.	January 29, 1987 @ Midnight.....	403 sec.	91 %
2.	September 21, 1981 @ 2:00 PM....	461 sec.	79 %
3.	January 26, 1987 @ 10:40 PM.....	466 sec.	78 %
4.	January 5, 1982 @ 5:25 PM	474 sec.	77 %
5.	December 9, 1986 @ 10:50 PM	477 sec.	77 %
92.	September 17, 1986 @ 5:20 PM ...	939 sec.	39 %
93.	April 16, 1985 @ 6:30 PM	1048 sec.	35 %
94.	February 5, 1986 @ 6:50 PM	1172 sec.	31 %
95.	January 20, 1988 @ 5:30 PM	1281 sec.	28 %
96.	July 28, 1981 @ 5:40 PM	1540 sec.	24 %
00.	Composite Worst Trip Link Time..	2221 sec.	16 %

.... BEST AND WORST TOTAL TRIP SPEEDS

The total trip time is most useful if it is directly translated into total trip speed.

Here again, the remarkable midnight ride of January 29, 1987 showed the ability to achieve 85% of the composite best trip speed.

TABLE 12 BEST AND WORST TRIPS : AVERAGE SPEED

Rank :			
0.	Composite Best Trip : Total Time	20.8 MPH	(100%)
1.	January 29, 1987 @ Midnight.....	17.6 MPH	(85 %)
2.	January 26, 1987 @ 10:40	15.8 MPH	(76 %)
3.	December 30, 1988 @ 8:10	14.8 MPH	(71 %)
4.	December 9, 1986 @ 10:50	14.7 MPH	(71 %)
5.	September 21, 1981 @ 2:00	14.5 MPH	(70 %)
92.	April 16, 1985 @ 6:30.	6.6 MPH	(32 %)
93.	January 17, 1983 @5:40	6.1 MPH	(29 %)
94.	January 20, 1988 @5:30..........	5.8 MPH	(28 %)
95.	April 14, 1982 @5:25	5.7 MPH	(27 %)
	(February 5, 1986 @ 6:50) breakdown	4.8 MPH	(23 %)
96.	July 28, 1981 @ 5:40 PM	4.8 MPH	(23 %)
	(December 1, 1989 @ 5:25) snafu	4.3 MPH	(21 %)
00.	Composite Worst Trip (3242 sec)	3.1 MPH	(15 %)

.... BEST AND WORST LINK EFFICIENCIES

The link efficiencies result from multiplying the loading by the speed, with all factors expressed as a percentage of the composite best. Because the composite best loading is virtually 100%, and the composite best speed is 100% by definition, the composite best link efficiency is 100%.

The April 14, 1982 trip of 70% link efficiency represents a remarkable standout, compared the next group of trips which are grouped around 57-58%. The trip occurred at 5:25 PM during the rush hour with a 100% jammed train. The train was also subject to a breakdown ("bad wheel") and withdrawal from service, as there were several lengthy stops before the train was removed from service at Kenmore. The following LRV which picked up the ejected passengers continued at a fairly swift pace down Commonwealth Avenue with a full load.

TABLE 13 BEST AND WORST TRIPS : LINK EFFICIENCIES OVERALL

Rank :	Trip	Link Efficiency
0.	Composite Best Trip	100 %
1.	April 14, 1982 @ 5:25	70 %
2.	May 24, 1982 @ 5:25..	58 %
3.	April 23, 1985 @ 4:45	58 %
4.	April 7, 1986 @ 5:25	57 %
5.	August 17, 1988 @ 5:10	53 %
84.	March 1, 1989 @ 6:00	7 %
85.	August 18, 1986 @ 1:00	6 %
86.	February 4, 1987 @ 8:00	5 %
87.	August 2, 1988 @ 9:35	4 %
88.	December 30, 1988 @ 8:10	3 %
00.	Composite Worst Trip	1 %

As expected, the best time period for train efficiency was in the busy 4:30 to 5:30 period. Off-peak trips with very low occupancy produced the lowest efficiency results.

The most critical element for efficiency measures is in the downtown tunnel, especially in the section generally recognized as the heaviest load point on the Green Line : Arlington-to-Copley. Along this tunnel segment, quite high link efficiencies were recorded for 3 peak hour trains which made good speed down the tracks.

It is interesting to note that the #4 and #5 ranked trips for high efficiency occurred in the off-peak : 8:30 PM and 3:45 PM respectively. (Table 14)

TABLE 14 BEST LINK EFFICIENCIES *** Inside Tunnel ***

ARLINGTON-TO-COPLEY

# 1.	April 14, 1982	5:25 PM	....	91 %
# 2.	August 17, 1988	5:10 PM	....	82 %
# 3.	April 11, 1986	5:10 PM	....	74 %
# 4.	April 12, 1982	8:30 PM	....	72 %
# 5.	Oct.13, 1981	3:45 PM	....	68 %

================ BREAKDOWNS AND SYSTEM FAILURES ================

Transit breakdowns are similar to highway accidents : major delays are caused by unexpected aberrations.

The MBTA has claimed that Green Line system reliability is improving because of the Type 7 cars, and indeed all observed problems with equipment occurred on the Boeing-Vertol LRVs.

Overall, 3 of the 96 trips (3%) were directly affected by fatal equipment breakdown during the trip, requiring riders to exit and wait for the next train.

Six trips (6%) involved unexpected skipping of stations (either an express announced after the trip was already underway or the unannounced bypassing of a stop.)

> The most outlandish experience occurred on the August 2, 1988 trip. I was riding in the second unit of a dual-LRV. The driver went past BU East and BU Central and proceeded past BU West without stopping. The second motorman phoned ahead and requested him to stop after skipping BU Central, but to no avail.

Another embarrassing mistake occurred December 1, 1989 when the motorman made the wrong turn at the Kenmore switch and ended up on the Riverside/ Beacon side of the platform. Lots of red faces ...... then everybody off.

"Individual Service Failure" is defined as rider inconvenience resulting from mechanical breakdown or unanticipated human decisions resulting in stopping changes for the rider's vehicle. Such a failure would mean either a skipped stop or being forced off the train and onto another one to complete the trip.

The "Individual Service Failure Rate" from the 10 failed trips is 10%. (The earlier Table 8 is reprinted below to aid the context of this discussion).

TABLE 15 "FAILURE" TRIPS ON THE BOSTON COLLEGE LINE

* January 27, 1982	8:15 PM	2 stops skipped
* April 14, 1982	5:25 PM	Major breakdown at Kenmore
* April 29, 1983	8:20 PM	1 stop skipped
* April 23, 1985	4:45 PM	Express to Brighton from B.U.East
* February 5, 1986	6:50 PM	Major breakdown at Kenmore
* April 11, 1986	5:15 PM	Express to Brighton from Kenmore
* Sept. 10, 1986	5:30 PM	Express to Brighton from Kenmore
* August 2, 1988	9:35 PM	Unannounced express past 3 Commonwealth Avenue stops
* August 9, 1989	4:30 PM	Major breakdown at B.U. East
* December 1, 1989	5:25 PM	Train ended up on wrong track track at Kenmore;everyone off

Total 10 failure trips or 10% of 96 sample Boston College trips

.... SYSTEM FAILURES

The "System Service Failure Rate" cannot be calculated from sampled trips, because it is a measure of train breakdowns which affect an entire section of the Green Line. There are two ways that such a rate might be calculated :

* A survey of Operations Headquarters could be made for reports of all train breakdowns or unauthorized skipping of stations.

* We could define a critical link (such as Park to Copley) and establish a minimum "tolerable" speed from an operations viewpoint. For example, the lowest 15th percentile of trips could set this threshold : any slower trip would rank as a system failure. However, such a definition would tend to generate 15% system failure rates, which would be no surprise.

Ideally, a system failure rating should be able to identify where mechanical or human failures generated a severe problem which affected at least 3 trains. This would require a central tracking system far beyond the MBTA's current capabilities or interests.

================ EQUIPMENT AVAILABILITY AND SCHEDULING ==========

During this sampling survey, no measurements were made of MBTA equipment service availability. The MBTA claim appears valid that equipment availability has improved on the Green Line, with the combined losses due to retirement of PCC cars and mothballing of irreparable Boeing-Vertol cars being more than offset by the delivery of the new Type 7 cars from Japan.

====== PEAK PERIOD CONGESTION AND EFFECTS ON PERFORMANCE ===

Public transit systems commonly have peak hours of operations between 8-9 AM and 5-6 PM. Two-hour peak periods have been identified as 7-9 AM and 4-6 PM. The transit peak (14-17%) tends to be sharper than for highways (8-10%), and the imbalance of off-peak ridership is growing more severe.

Are efficient transit operations inevitably crippled by the directional peakiness of this ridership demand? The data suggest some interesting opportunities for improvement in the 96 afternoon and evening outbound trips sampled.

Seven time periods were used to segment the peak and off-peak travel times, as shown in Tables 6 and 7. The data from Table 6 is also shown graphically in Figures 2-5. (NOTE : because the very first trip was made in 1977 and did not record loadings, the trip totals may sum to only 95, not 96).

TABLE 16. PERFORMANCE VARIATIONS BY TIME OF DAY

	# TRIPS	=============AVERAGE=============			
	SAMPLED	LOADING	DWELL	LINK	EFFICIENCY
* Noon to 3 PM	11	33 %	27 s.	80 s.	19 %
* 3-4 PM	6	42 %	28 s.	75 s.	26 %
* 4-5 PM	13	52 %	35 s.	81 s.	31 %
* 5-6 PM	36	60 %	41 s.	87 s.	34 %
* 6-7 PM	15	42 %	31 s.	87 s.	24 %
* 7-9 PM	9	43 %	23 s.	69 s.	28 %
* 9PM to Midnight	5	20 %	16 s.	61 s.	15 %

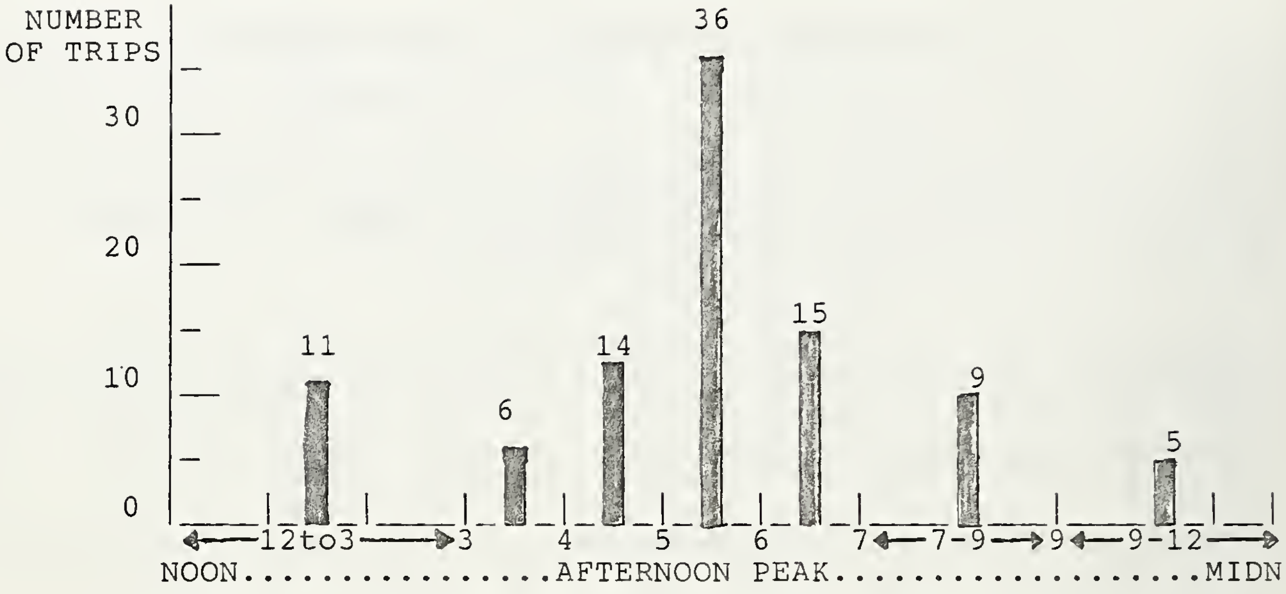


FIGURE 2. Distribution of Sampled Trips by Time of Day

.... LOADING OF GREEN LINE CARS

Loading during the peak 5-6 hour averaged 60%, which is remarkably low for the peak directional flow. While this implies a 40% reserve capacity in the peak hour, the 60% average loading figure is affected by several factors :

* Loading variations along the route. In the summer, for example, B.U. loadings are less, and many riders get off at Copley.

* Surges in demand, such as from the new 6-car Red Line trains or from office personnel departing exactly at 5:00 can cause some trains to be jammed, while others are lightly loaded.

* Crowding around the doors, while prevents all standing space from being utilized.

* Uneven loading of train units, with the front of the train typically being more heavily loaded than the rears.

* Bunching of trains, so that one overloaded train is followed closely by one or more lightly loaded trains.

Loading during the 4-5 PM period is quite high at 52%, while the 3-4 PM and 6-7 PM periods show identical average loadings of 42%.

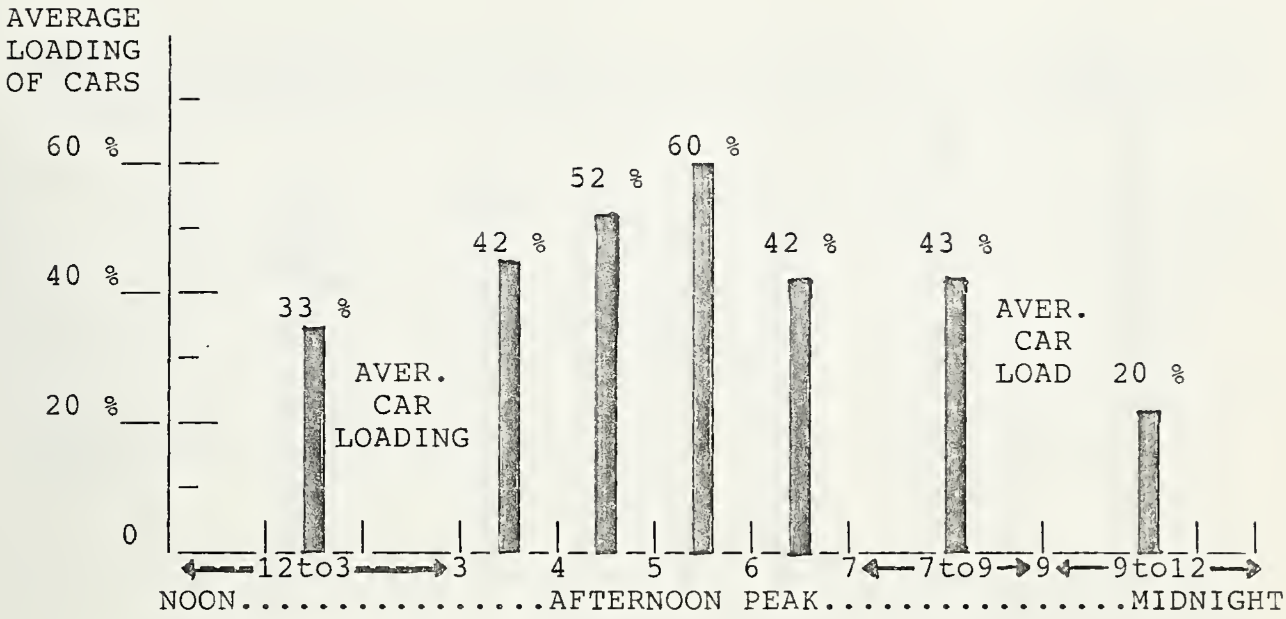


FIGURE 3 Average Train Car Loading by Time of Day

.... AVERAGE DWELL TIMES

As expected, station dwell times increased significantly during the peak hour. These dwell times are roughly proportional to the train loading when the results are averaged, but it was also evident from observation that as trains became jammed, dwell times increased disproportionately -- as people getting on and off had to squeeze past others standing is the aisles or stairwells.

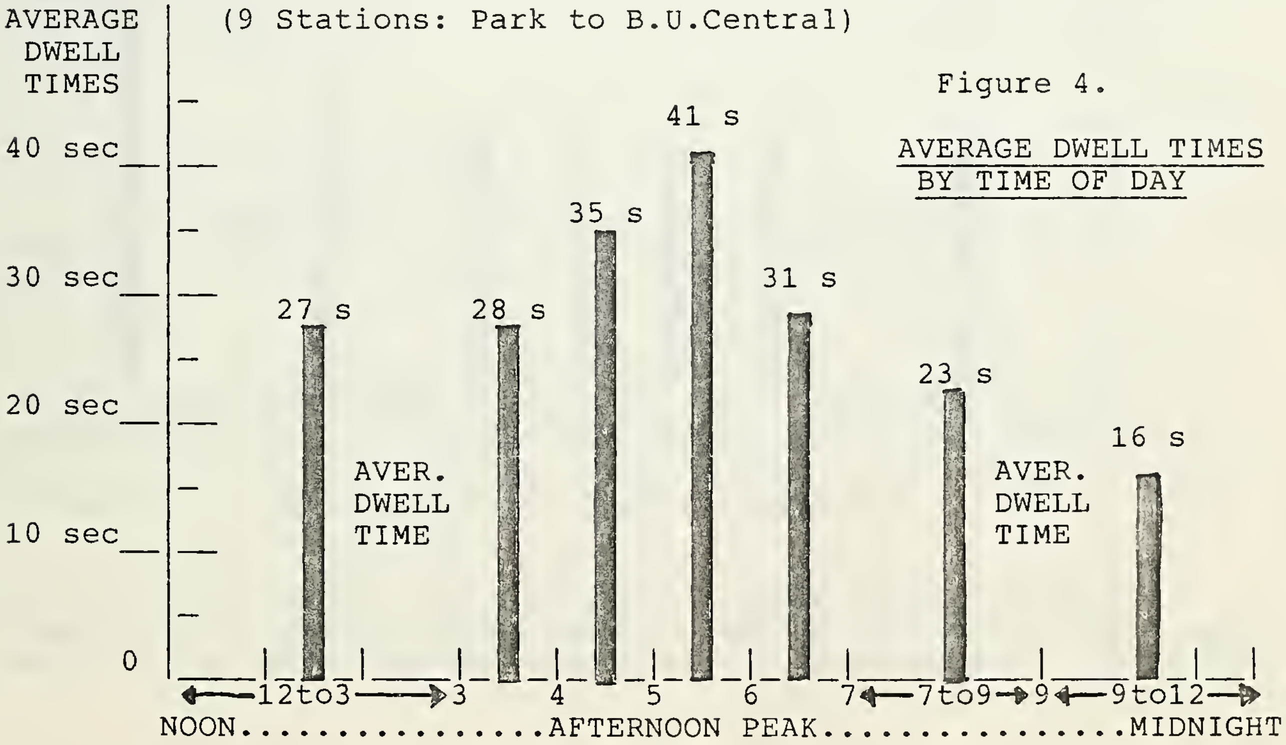


Figure 4.

AVERAGE DWELL TIMES BY TIME OF DAY

Figure 5 below shows this approximately linear relationship between average car loading and average dwell time.

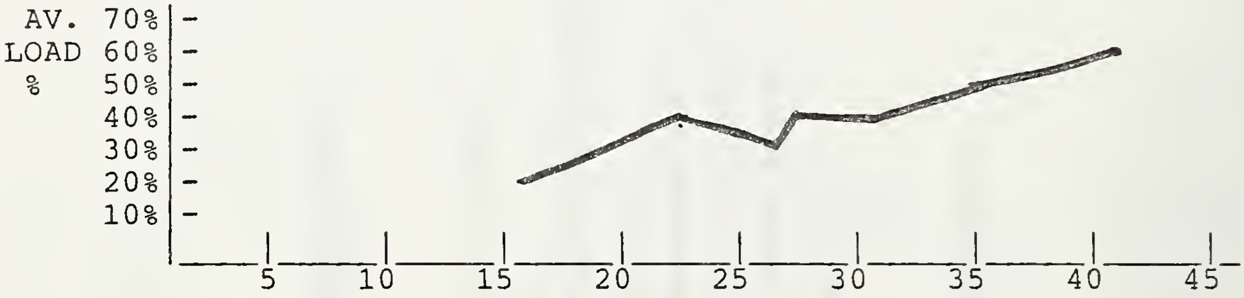


Fig. 5 AVERAGE STATION DWELL, seconds

.... AVERAGE TRIP AND LINK SPEEDS

Average trip speeds decline as expected during the 5-6 peak hour, about 10% compared with the adjacent "shoulder" periods of 4-5 PM and 6-7 PM. During the average peak hour trip, trains moved at only 9 miles an hour.

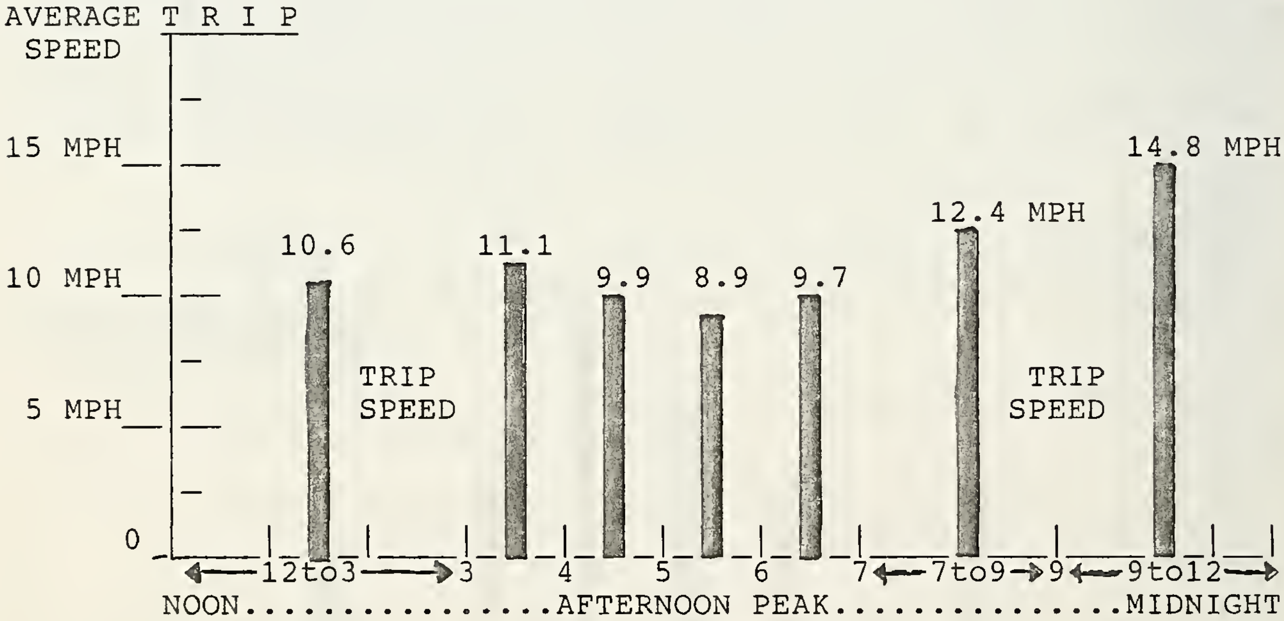


FIGURE 6 Average Trip Speed of Trips by Time of Day

Figure 6 above shows the average trip speed during the day. The average speeds during travel between station -- or the link speed -- is shown on the next page in Figure 7.

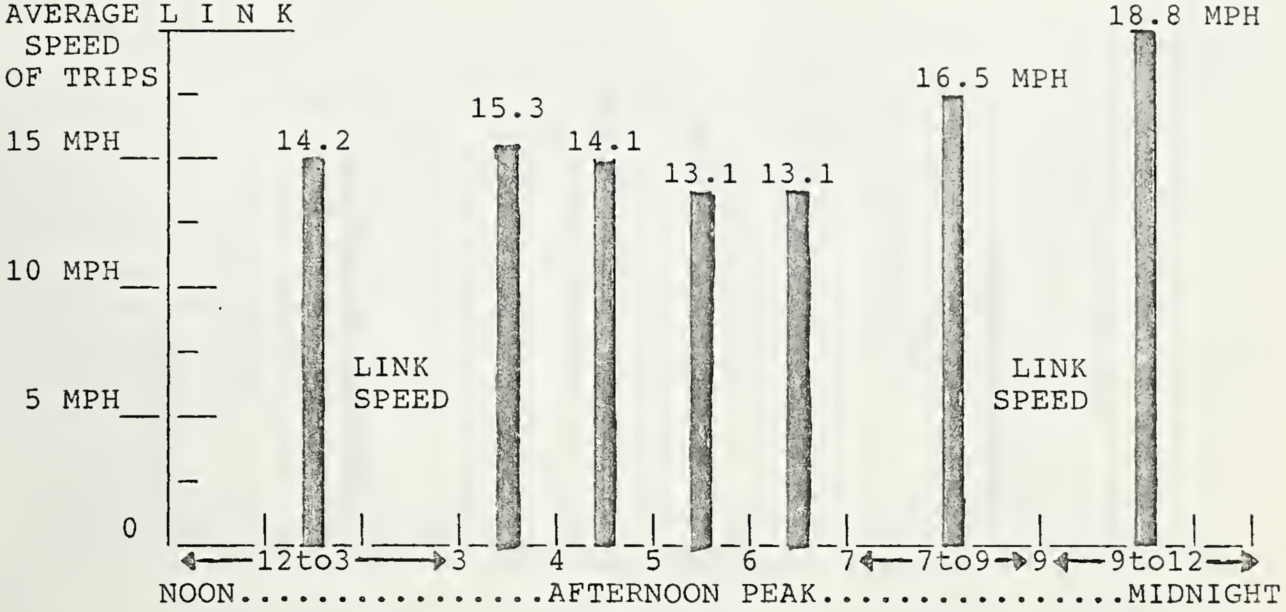


FIGURE 7 Average Link Speed of Trips by Time of Day

The link speeds show lesser variation in percentage terms than total trip speeds, because dwell times are higher (as expected) during peak hours. Still, the variation in link times is far greater than one would expect due to slower acceleration caused by the weight of passengers in heavily loaded cars. A well-run system would show only minor reductions in link times during the day, so that large variations in link times are indicators of poor operating control of the Green Line system.

.... LINK EFFICIENCIES

The efficiency is the combined effects of speed and loading. A train which is fully loaded and is moving at the best-ever attained link speed has a 100% efficiency, by definition. So a train which is only half loaded and is moving at only 50% of the fastest speed has a link efficiency of only 25%.

The overall trip efficiency can also be calculated by comparing loadings with the total travel time (including both link time and dwell time). Due to time and space limitations, such as analysis has not been included in this report.

The net result of large peak hour loadings and somewhat diminished link speeds is that people-moving efficiency does indeed peak during the 5-6 PM period, but by only relatively small amounts compared to the off-peak "shoulder" periods.

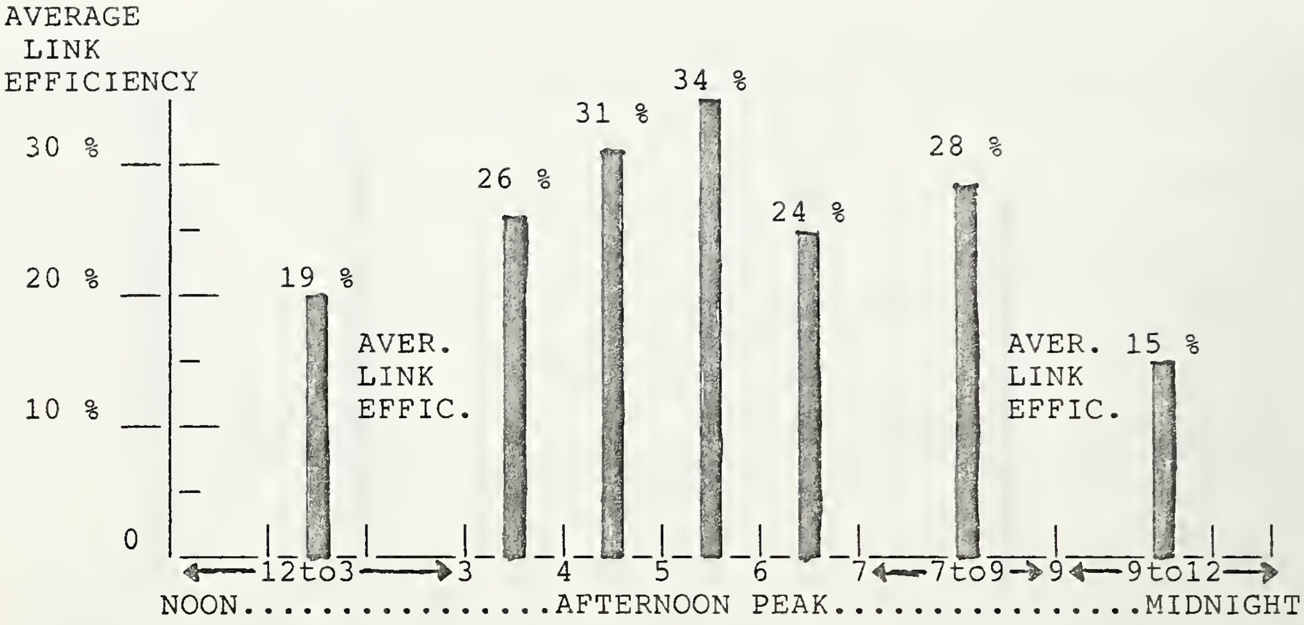


FIGURE 8 Average Link Efficiency by Time of Day

Another evident result is the efficiency drop between 6-7 compared to the later 7-9 period. Car loadings were fairly constant between both periods, but the slow dwell and link times during the 6-7 PM period suggest a carryover from the 5-6 peak hour, with train bunching and deteriorated performance carrying over past the 5-6 time into the 6-7 slot, even though the real "rush" has subsided. These results suggest that the 6-7 time represents a recovery period in order for the train schedules to get back into better order.

Another explanation may be that there are employee and management changeovers, with new vigor taking over after the rush hour. Furthermore, multiple shift factories typically have different types of management and employees between the two shifts, with daytime management likely to be more bumbling and interfering than the evening shift. As a consequence, employees who are more self-motivated and resentful of low-quality management may be attracted to the evening shifts.

.........BEST AND WORST TIMES

The range of speeds and loadings provides an even better insight into the turmoil of the peak hour Green Line. There is very little variation in the best link times from noon to 9 PM, with the best trip typically averaging a minute for each link. The worst link times vary dramatically, from 76 seconds to 193 seconds.

Because of heavy peak hour loads, the best efficiencies double during the 5-6 peak, compared to the shoulder periods. In other words, individual trains can perform very well during the peak hour -- in terms of both speed and passenger-carrying capability.

TABLE 17 RANGE OF SPEED + LOADING VARIATIONS BY TIME OF DAY

	==== LINK TIMES =====			====EFFICIENCIES===		
	AVERAGE	BEST	WORST	AVERAGE	BEST	WORST
* Noon to 3 PM	80 s.	58 s.	101 s.	19 %	38 %	6 %
* 3-4 PM	75 s.	69 s.	81 s.	26 %	35 %	12 %
* 4-5 PM	81 s.	62 s.	105 s.	31 %	58 %	14 %
* 5-6 PM	87 s.	59 s.	193 s.	34 %	70 %	9 %
* 6-7 PM	87 s.	66 s.	147 s.	24 %	43 %	7 %
* 7-9 PM	69 s.	61 s.	76 s.	28 %	46 %	3 %
* 9PM to Midn.	61 s.	50 s.	69 s.	15 %	22 %	4 %

The range in efficiency -- from best to worst -- is the most startling result. One was always aware that good trips were much better than bad trips on the MBTA, but the concept that the best trip would be almost 8 times better than the worst trip is somewhat startling in impact. The system steadily degrades from moderate equilibrium in the 3-4 PM period, to a huge efficiency spread in the peak 5-6 period, and then staggers through the 6-7 period on its way to eventual recovery later in the evening.

It can reasonably be concluded that during the peak hour and shortly thereafter, the Green Line goes slightly "haywire" -- or out of control. It becomes much more erratic and variable. The need for an on-going analysis of these service variations becomes increasingly justified.

Several conclusions can be drawn from these tables and diagrams :

** Performance from 7 PM to midnight was surprisingly better than the norm. The improved consistency in performance on the evening shift occurs when the primary daytime shift of operations managers has gone home. The explanations might be superior managers at night, more motivated employees, or less meddling by less-than-competent daytime managers.

** Variations in link times increase significantly during peak hours. The differences between the best and worst link times are very revealing. The system demonstrates an ability to make best trips of approx. 60 seconds per average link from midday through the early evening hours.

** Train observations during the trips also showed an unusual percentage of poor trips in the 6-7 PM time slot. This result may be due to residual bunching and confusion carried over from the peak hour 5-6 PM operations.

** The achievement of a 70% efficiency for one trip during the 5-6 PM peak hour is quite good. (A rating of 100% represents the impossible situation of moving a 100% loaded train at record speeds.) A 70% rating is also equivalent to moving an 85% loaded car at 85% record speed. In other words, the system has remarkable capabilities, and these capabilities have been demonstrated in the peak hour.

** At the opposite end of the spectrum is a peak hour trip with only 9% efficiency. This is equivalent to a peak hour train which is only 30% loaded moving at only 30% of record speed.

================== FURTHER STATISTICAL ANALYSIS ===============

So far, this report has discussed the simple matters of average times or speeds, and the range of measurements obtained. The next step is to consider the implications of more advanced statistical results. The most common statistical feature of varied or scattered data is the standard deviation, which is a measure of the "spread" in the scatter of data. A small standard deviation implies that data is very consistent and lies quite close to the average. A larger standard deviation suggests much more scatter beyond the average. The higher the standard deviation, the more inconsistency is in the data or performance.

Most statistical analyses for quality control are usually performed by first deciding what variations from average or specifications are acceptable. There may be different gradations of severity in tolerance, ranging from "marginally acceptable" to "completely unacceptable". Important individual judgments go into setting this standard of acceptability. If management sets a very lax standard for acceptability, the number of rejects is reduced (which looks good on paper), but the quality of the product to the comumer may suffer.

Let's take an example from industry. In machine tools, if management accepts sloppy parts, they can achieve a lower rejection rate. "Acceptability" improves, but quality suffers, and service may be unacceptable to the consumer.

With mass transit, management can intentionally set too flexible a tolerance for poor trips. The result is easy "success" -- with almost all trips "acceptable" to the lax standard set by management. The riders may fume, but management can rest smugly satisfied at their survivalist ruse.

In industry, once one has established standards for any tolerable variations in quality, engineers can calculate the standard deviation of actual production samples. There will always be a few cases where production work is so deficient that the part or product must be rejected, but this percentage will always be small.

Again using the example of machine tools, standard deviations of 1% or less are tolerable. Exceptions to this "toleration range" are by definition "intolerable" and are classified as defects, to be withdrawn from the manufacturing process. A defect or failure rate of 5% is indicative of a very sick manufacturing process, and 25% (as occurred on some of the last U.S television assembly lines) is downright disastrous. Field reports from one of the most famous disasters of all time -- the Edsel -- indicated that up to 90% of the first 1958 Edsels delivered to the dealers simply would not run.

As another example, materials processing is less critical in terms of deviations in properties. Typically, material strengths and other properties might vary 3% or less and still be acceptable for commercial use.

Much of the success of America's "Arsenal of democracy" in World War II was attributable to the combination of a renewed work ethic and statistical quality control. When early American bombs and planes did not work properly and reliably, major efforts were expended to assure that things would work properly in the future.

Unfortunately, the end of World War II also brought about a gradual abandonment of statistical quality control in the U.S. Coincidentally, the mass transit industry continued in a long downward slide towards reduced efficiency and reliability of service. While the United States abandoned much of its skills in quality control, the Japanese adopted many of the old American methods for measuring and insuring quality .... and revolutionized the automobile business, as well as consumer electronics.

Therefore, it was not entirely in a humorous vein that I have offered the suggestion for Green Line operations to be contracted out to the Japanese. In the United States, deficient management has enjoyed a monopoly for too many years, and they have been shielded from responsibility for their performance by the innocent protection offered by genuine transit advocacy groups, such as environmentalists and rail fans. We must recognize the "transit management gap" which exists in Boston and other major American cities, compared with the vastly superior transit operations in other countries, especially Canada, Europe, Japan and including .... Moscow.

Why have American transit managements fallen down so badly, especially compared to less advanced nations? If the "Best and the Brightest" in our nation went into high tech, Wall Street, and national government, where did the "Worst and the Dumbest" go?

For decades, we have been puring vast sums and personnel into the space and the military, depleting our available skills and attentions away from urban transit operations. The Russians too had this space/military fixation. They may have reduced the Soviet Republics to a collections of basket cases, but the Moscow subway still works. In peak hours, trains come in 30 seconds after the last one has left.

Consider this comparison : while the Japanese have adapted one of the most advanced forms of computer applications -- fuzzy logic -- to the optimization of minimum delay for passengers on the Tokyo subway system, the MBTA avoids any measurements of passenger delays and instead issues press releases on how many more people are happy with T service ..... compared to the days of Barry Locke.

Therefore, statistical quality control for transit service must be seen as a matter of skill and belief, and cannot be mandated. If the Japanese and the Moscovites have quality in their systems, we should find out how and why. If MBTA management is not prepared to make a commitment to setting proper goals for transit operations, then those services should be contracted to other parties. Given the lack of concern for operations quality by MBTA management over the past 2 decades, we should assume that if service quality control and MBTA management cannot be made into a harmonious fit, then one of them will have to go, and it will not be service quality control.

All subsequent discussion of service variance be based on the assumption that -- by whatever means appropriate -- a managerial attitude is present which is enthusiastic for providing consistently good quality service.

.... STANDARD DEVIATION OF SYSTEM PERFORMANCE

So far, this analysis has considered simply the averages or the extremes of Green Line performance. The extent of statistical scatter can be determined by using the measure of the Standard Deviation, or the Standard Deviation percentage (also called the Coefficient of Variation). Commonly, the standard deviation is a statistical measure reflecting the variation of data about an average, expressed in the original units of measurement. For example, the standard deviation of dwell times would be expressed in seconds, as is dwell time. However, it is more useful to utilize the percentage of standard deviation, where

$$\text{Percentage of Standard Deviation} = \frac{\text{Standard Deviation}}{\text{Trip Average}}$$

(expressed as a %)

In the discussion in the previous section, the examples used for comparison were :

* machine tools ...... with a Standard Deviation of 1%
* materials........... with a Standard Deviation of 3% or less

The peak hour MBTA Green Line service, based on 96 sample trips, has the following characteristics :

	5-6 PM	3-4 PM
* car loading ..... with a Standard Deviation of	39%	... 36 %
* station dwell.... with a Standard Deviation of	66%	... 26 %
* link speed ...... with a Standard Deviation of	30 %	... 6 %
* efficiency ...... with a Standard Deviation of	43 %	... 30 %

These striking results illustrate not only the contrast between MBTA service and well-monitored machine tool & materials industries -- they also illustrate how extensive is the deterioration of service into widely scattered variability during the peak hour.

These results represent trip monitoring primarily over a 10-year period. The results show no evidence of reduction in the scatter during this period, except for link speed. The averages have shifted in the direction of reduced average loadings, increased average speeds, and reduced efficiencies, but the scatter of performance around these averages remains a major problem.

Unfortunately, we have no data from the 1930s and 1940s as to schedule adherence and performance variation, so there is no way of determining statistically how much better schedule performance was in decades past. We know only from hearsay and the advertised commitment to schedules that things were indeed better years ago. MBTA management rigorously resists any comparison of present day service with service achieved in these earlier periods, and instead uses the 1981 Barry Locke period as the baseline for comparison.

......VARIATIONS IN CAR LOADINGS

The variations in loading during any time period stay within a range of 36% to 49%, except for the 7-9 period, which could reflect evening sports activity in Boston and the irregular surges which result.

Another contributing factor to variable car loadings could be the 50% increased surges occurring from the longer cars on the Red Line. The new 6-car trains on the Red Line will tend to send larger passenger surges onto Green Line platforms.

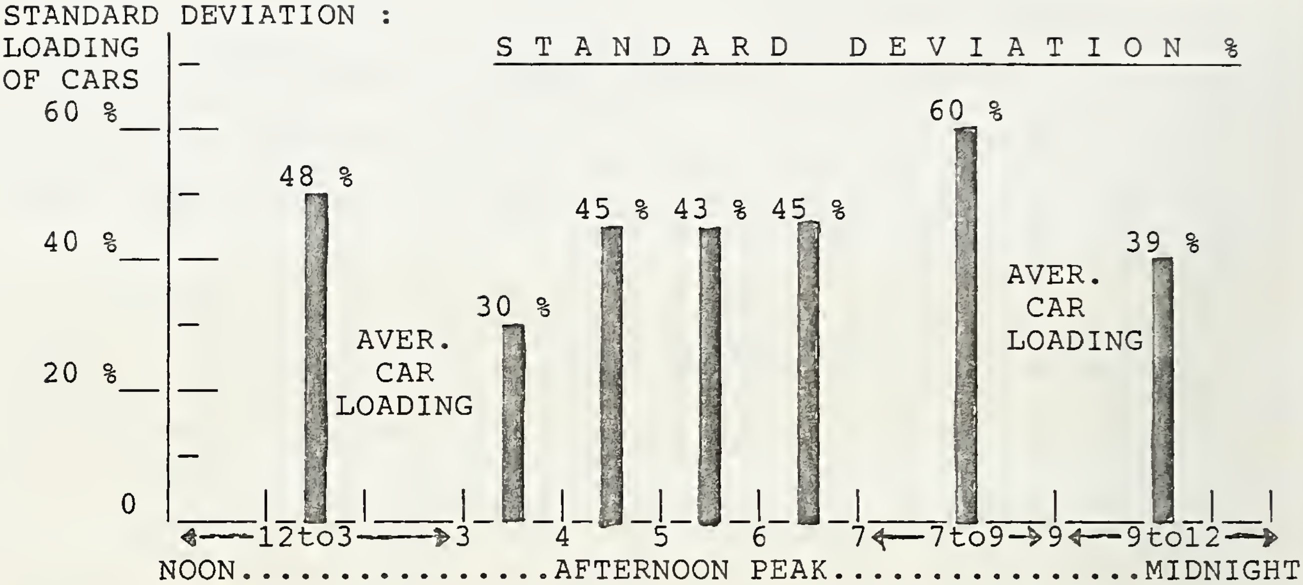


FIGURE 9 Standard Deviation : Loading by Time of Day

........VARIATIONS IN AVERAGE DWELL TIMES

The variation in dwell times showed the most prominent sensitivity to peak hour loading. As trains become overloaded, especially if the stairwells become jammed, it takes much longer for passengers to make their way from the interior of the car to the steps and out the door.

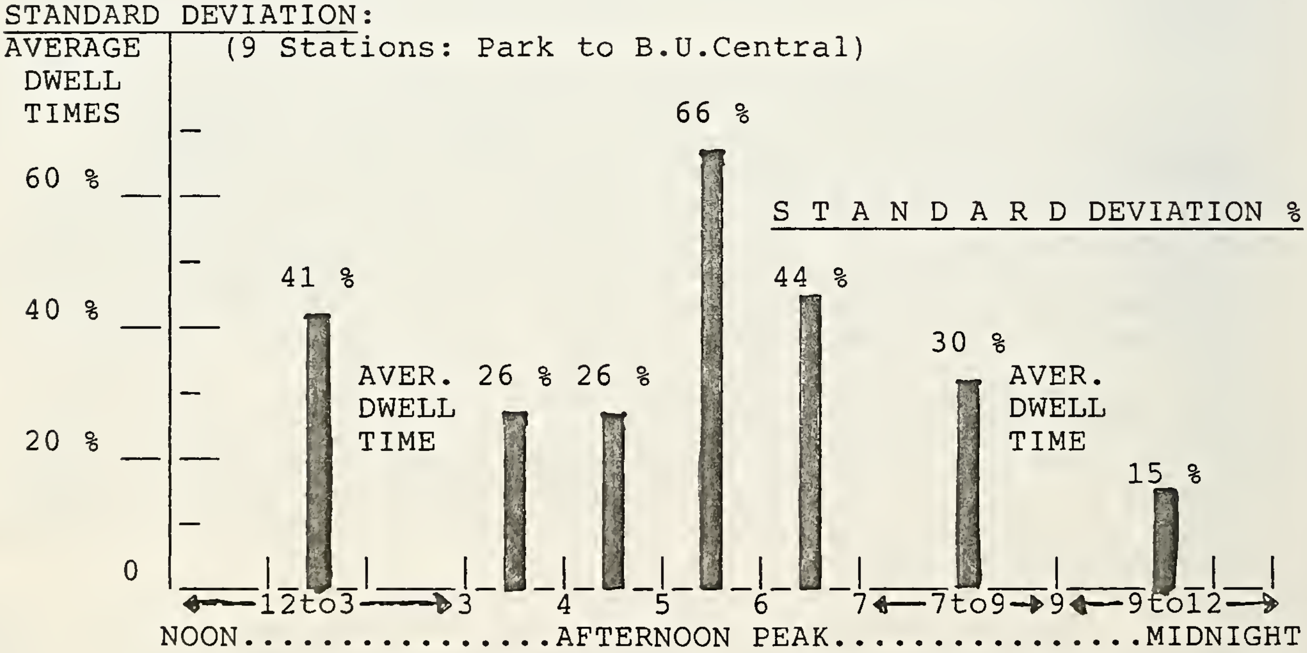


FIGURE 10 Standard Deviation : Dwell Time by Time of Day

The loading process is hampered by the likelihood of people trying to climb the stairs as others are trying to exit. There is a lack of eye contact for easy communications and yielding of position, and the handrails are not comfortably located for exiting.

Only on one or two occasions did MBTA platform attendants take active roles in preventing car overcrowding. Generally, passengers were left to their own devices to handle the issue of when a train was so overcrowded it warranted waiting for the next train.

.... VARIATIONS IN AVERAGE LINK SPEEDS

Variations in speed were most prominent in the peak hour, although the 6-7 PM period also showed wide variations as the Green Line system struggled to regain its operating composure after the rush hour.

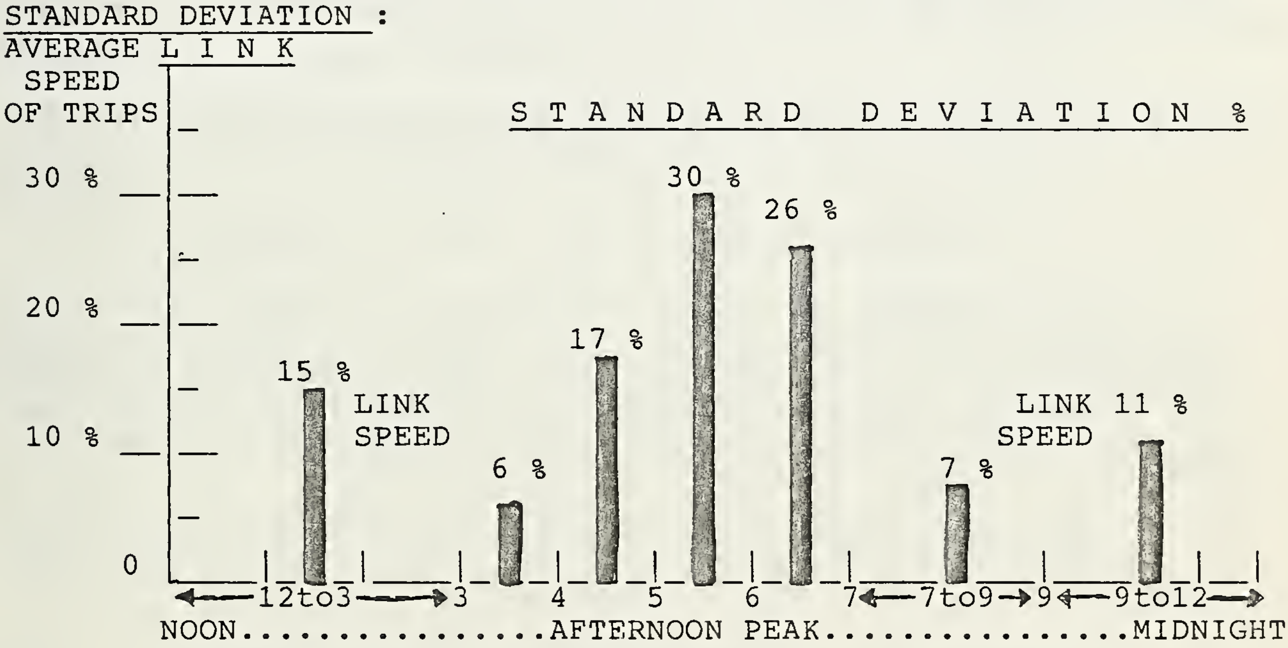


FIGURE 11 Standard Deviation : Link Speed by Time of Day

.... LINK EFFICIENCIES

Recall that the efficiency is the combined effects of speed and loading. A train which is fully loaded and is moving at the best-ever attained link speed has a 100% efficiency, by definition. So a train which is only half loaded and is moving at only 50% of the fastest speed has a link efficiency of only 25%.

The greatest link efficiency variations occurred during the mid-evening hours, probably due to sporting events.

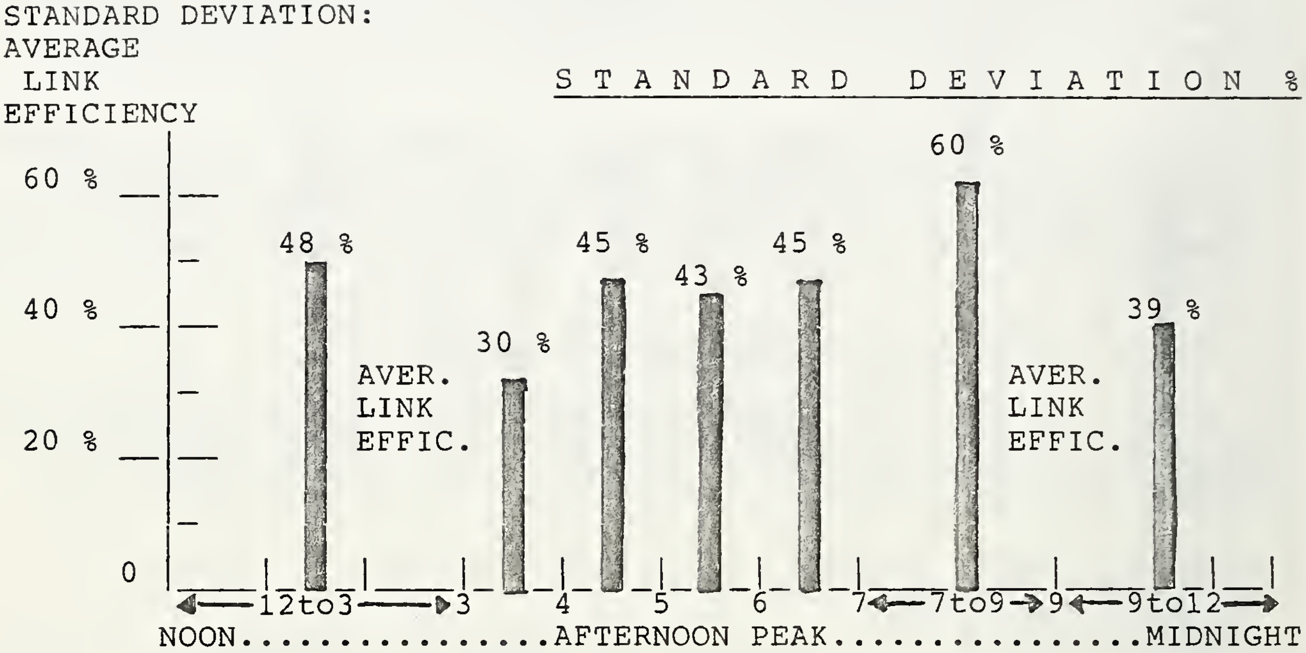


FIGURE 11 Standard Deviation : Average Link Efficiency by Time of Day

=========== SETTING PERFORMANCE GOALS BASED ON SAMPLING ==========

The analysis so far has established a decent statistical base for determining essential information on service performance on the Green Line, in particular the standard measures of averages and variances (scatter). From the 96 sampled trips over a 10-year period, we can draw certain conclusions about service, how to measure it, and how to structure the data sheet.

The next question is : where do we go from here? How do we use the data to set performance goals and measure any subsequent success in their attainment?

Clearly, 96 trips in 10 years is still too small a sample to get a good grasp on Boston College Line performance, let alone the Green Line as a whole. Ten trips a year gives some idea of how well things are going, but we would be better off with 100 trips in the sample each year, with about half of them in the peak hour. If the sample included the other Green Line branches as well, we would be talking about 400 total trips in one direction, with 100% coverage of Park-to-Copley and 75% coverage of Copley-to-Kenmore. In terms of gathering the trip data, such a sampling rate would represent 4 riders (one on each branch) recording 40% of their daily trips. Ideally, one would use an independent corps of samplers (selected and coordinated by the MBTA Advisory Board and Association for Public Transit) so that commuter trips could be combined with data gathering.

Data sheets would be submitted to the Ridership Consortium (see page 6) and processed there by technical staff entirely independent of the MBTA. While processing and printing of each trip analysis form (Appendix A) has heretofore taken about an hour, this time could be trimmed to about 10 minutes with skilled key punching. The basic information on dates, loadings and times takes only 2-3 minutes to type, while comments on travel conditions, other trains and any special delays/breakdowns would average out to another 5 minutes. Final printing and loading of a new blank data form would take another 1-2 minutes, using print spooling and hard disk access.

.....SETTING QUALITY TOLERANCES IN TRANSIT SERVICE

In industry, production lines commonly function within certain set tolerances. These standards are set by establishing an ideal attainable target, with allowable deviations or tolerances. Any part that does not meet the tolerance represents a defect. Defects can be incidental, minor or major. Once areas of too many defects have been identified, the production managers must then determine where and why the problem is occurring and how to reduce the number of defects produced.

The efficient management of this process is called Quality Control and is the essence of good industrial management -- whether it is the American "Arsenal of Democracy" in World War II or Japanese consumer goods produced for the world market.

By implication, a transit authority should be considered as an industry in the business of providing a public service, namely mass transportation. There will always be a supply/demand debate between liberals and conservatives over how efficiently mass transit should be run. I regret that Liberals have surrendered the concept of efficiency to the Conservatives without a fight, while Conservatives tend to view "Public Service" as a Communist plot. The net result is a transit system in the United States which ranks among the lowest in the world in terms of efficiency and professional commitment -- a vast distance arrears of Canada, Europe and Russia.

In response to this controversy over equity vs. efficiency, the analysis below will assume a fixed availability of personnel and equipment, with no route changes or schedule reductions for existing Green Line riders. If more riders take advantage of any improvement in service quality, all the better. Any efficiency improvement should be used to allow for ridership growth -- and any effort by conservatives to respond with service cuts should be actively resisted. The bias towards bringing more cars into the city -- as reflected in the current designs for the North Area of the Central Artery -- should be reduced, in favor of a stress on efficient mass transit serving more people, not less.

Similarly, Liberal paranoia that efficiency improvements will automatically trigger conservative service slashing must also be resisted. Efficiency should not be such a terrible and frightening word for transit advocates and should not be seen as the unmentionable "E-word". The really deadly "E-word" should be Edsel, which best describes the recent state of MBTA management.

The MBTA shows little evidence of even preparing to approach issues of service tolerance and acceptability. In the summer of 1983, the MBTA publicly declared that any delay greater than two minutes warranted an announcement and an explanation to passengers. Unfortunately, the MBTA does not monitor to see whether such announcements are made.

These delays must, of course, be measured against some standard, the only available one being the printed schedule times. Since trains on the Red and Green lines seldom run on schedule, how is it possible to identify when one is 2 minutes late?

..... TRANSIT GOALS SHOULD BE BETTER THAN AVERAGE

Unlike regular industrial quality control, the tolerance for MBTA travel should not be centered around an average. The difference between transit and regular industrial production is that very fast transit trips are better than very slow ones. The fast trips may result in bunching, but they also represent a potential for improvement in service. The reasons for a trip occurring much faster than average are :

** Fewer passengers are waiting at platforms or riding on the trains, due to simple statistical variations.

** Faster loading/unloading occurs due to better equipment -- more train units, wider doors, fewer steps, etc.

** Higher speed or acceleration/braking capabilities of the train shortens link times.

** Better skill or motivation by the motorman causes him to operate briskly and efficiently.

** Whim or sabotage by the motorman, caring little about schedules or intentionally undermining them by going too fast.

** Slowdowns in trains ahead, so the lead trains become more heavily loaded than following trains. (The "Instability Effect", resulting in bunching)

Some fast train trips will be undesirable because of the Instability Effect which causes train bunching. To prevent bunching, operators have three main choices :

1. Skip stops by making the train an "express"
2. Speed up the leading trains by taking on fewer new riders, accelerating and braking more sharply, and traveling at higher speeds between stations.
3. Slow down any train which is ahead of schedule, and allow lagging trains to catch up and maintain a regular passenger loading.

Factor #1 (express trips) is commonly used by MBTA management to correct a situation after delays and crowding have already gone bad. With express strategies, many passengers are forced into getting off one train and onto another -- a major inconvenience. This approach is like industry reworking its defective products : the strategy is to patch up defects rather than fix and monitorthe process.

Factors #2 and #3 above involve selectively speeding up or slowing down trains. At worst, some riders would encounter slightly longer delays in order to maintain line stability. (The alternative of inaction is likely to be line instability and bunching. Delays will be even longer.) Selective speedup or slow-down of trains has a considerable potential for avoiding bunching, provided a monitoring system is in place and the train operators are properly responsive.

Train speedup within reasonable operating schedules should be seen as a union-management goal, with incentives to the carmen for good service achievements. The use of service monitoring as a device by management to impose arbitrary "speedup" in the traditional union/management sense must be actively avoided.

While fast trips may be an aberration from the average schedule, they also tell us something of the service potential of the system. They are reassurances that transit service in Boston can be improved and could once again reach the levels of quality and schedule adherence achieved in years long past.

Slow trips have no merit whatsoever and should be the first priority for service improvement. Only after progress has been made in cutting down the frequency of the "worst trips" should there be parallel efforts to trim down the frequency of very fast trips.

=============== DEFINITION OF ACCEPTABLE SERVICE ==============

There is a clear implication that "tolerance" means something is "tolerable". It may be argued that today's MBTA transit riders finds current service to be tolerable -- otherwise they would not be riding. In truth, many riders have no choice (no car, no parking). "Intolerable" transit service will also drive transit riders into purchasing a car and clogging the roads.

As a consequence, our focus should always be on the relative strengths of transit and autos.

ADVANTAGES TO TRANSIT

** "No fear of accidents"
** "No parking problems, costs"
** "No driving hassles"
** "No highway congestion, delays
** "No car ownership costs"
** "Time to read, music..."
** "Less energy, pollution"
** "Less need for highways,
pavement, garages"

ADVANTAGES TO AUTOMOBILES

** "Personal safety"
** "Travel independence"
** "Personal privacy"
** "No transit delays"
** "No transit fares"
** "Cleanliness, no smells"
** "Quickest travel time"
** "No waiting at platforms"
** "More reliable"
** "More carrying space"
** "Protection from weather"

In terms of basic operating equipment, there is little that can be done immediately for transit. The best short term possibilities are to reduce transit delays, improve travel times and minimize waiting times at platforms. In this way we improve riders' tolerance of transit, to offset some of the advantages claimed by auto drivers.

In industry, a tolerance is what is allowed in order to make conditions acceptable. With transit ridership, acceptability varies from person to person. If service declines, 10% may find it unacceptable and make other travel plans. If decline continues, some of the remaining 90% will abandon transit.

We begin with the evidence that today's transit service is at least marginally acceptable to its riders, because they are the hangers-on who have not yet quit. Improving performance will bring to transit many new faces whose concept of acceptable transit service is somewhat higher than the norm. Every further improvement in service opens up transit service to a new group who find the improved service now "acceptable".

Historically, the level of acceptability for Boston transit has shifted. In the 1920s, signs were posted requesting riders to notify management of impolite motormen. Today, who cares? Trains used to run on schedule, now they do not. In past years, people could travel on a schedule, now they do not. If transit service improves, one would expect that what the public would accept -- and expect -- would improve as well.

Most managers hope that as service improves, the dissatisfied will become satisfied. In truth, the satisfied may become dissatisfied : they may want more, and their repressed anxieties may find a voice. Ah, such is gratitude. Similarly, when service declines, many riders who are dissatisfied will become satisfied or at least complacent -- merely as a response of helplessness.

================= TRIP TOLERANCE LEVELS ====================

The total span for trip times in certain periods may be as high as +/-50% around the average. This is clearly a situation of large variability, and the goal should be to operate with a much smaller range. Clearly a variability of +/- 1% is too fine and unnecessary. Trip variations of more than 20% are pressing the boundaries of acceptability, while +/- 10% appears to be a goal well within the acceptability limits of riders and also one which could be attained by a well run system.

It should be emphasized that variations in total trip speeds will be less than the worst variations in individual links and dwells. Normally, in industry one can relax the tolerances for individual elements, without jeopardizing the overall tolerance. In practice, the transit analogy would be that a slow dwell could be followed by a fast link, and thereby maintain progress towards an acceptable overall trip.

However, in transit, failures have a tendency to propagate through the system, and contribute to line instability. Under present MBTA monitoring, elemental delays such as long dwells are seldom identified, nor are they followed up by efforts to achieve speedy links and dwells at subsequent stations. With transit systems, it makes sense to target the most deviant links and dwells as the best way to avoid train bunching and slow service.

An additional emphasis peculiar to transit should be an initial stress on improving link performance. All dwells are subject to surges of passengers from other platforms or entrances, or to random delays such as handicapped or elderly passengers. Traditionally it has been the platform starter's role to keep track of trains and train loading and to serve as a train dispatcher. Unfortunately, this role has not been developed in recent years, and every dispatcher seems on his own, isolated from up-to-date information on system conditions. How remarkable it is that a McDonald's restaurant will have the crew chief with a portable headset for communications with others on the premises, while the MBTA with such a larger system keeps its platform-based crew chiefs in the dark. Providing starters with clear roles, instructions and communications would be an important element in improved efficiency, but such a system would need to be set up and operating with consistency before any dwell optimization program was imposed on the operation.

By contrast, link performance should not show large variations in a well-operating system. Passenger loadings may hinder acceleration and braking to a small degree, but overall link performance should be independent of peak periods.

The initial goal is to identify the best link time as the performance standard, followed by setting a tolerance or threshold for the worst trips to be allowed.

Conceptually, all 96 sample trips could be evaluated for the amount of service improvement if a threshold standard was set and all speeds & dwells below this level were brought up to this threshold. We would look at all the very bad times in the 96 trips and calculate how much of an improvement would have resulted if we replaced these times with the minimal levels now tolerable.

For example, we could set a target of Level-of-Service D or better for all link speeds. A target of LOS D means any link which was less than 55% of the best speed would need to be improved ; it would be out of the range of tolerant deviation from the standard. A Link measured at LOS E would be about 50% of best speed, so the improvement would be raising 50% up to 55%.

Each improvement to LOS D could represent a certain percentage of speed improvement or reduced trip time. The cumulative savings from all improved trips would represent the incremental trip time that the average rider could expect to save.

The decision on establishing performance targets are entirely a matter of our judgment. In practice, we would proceed with a series of steps -- first seeing if LOS F tolerance levels can be met, then gradually improving them to LOS E, LOS D and so forth. These targets should not be set without a full appreciation of the unavoidable variations in ridership arrivals, handicapped, equipment aberrations, weather, and the moods of managers and carmen. By analyzing the 96 sample trips to see what effects will arise from setting different target thresholds, we can estimate the possible improvements, which would be balanced against the human difficulties of maintaining daily transit operations at progressively higher standards.

From this logic of statistical analysis and goals, we can see the overall data analysis proceeding as follows :

** Average speeds for each trip and for all trips

** Range of speeds for each trip : maximum and minimum
-- both total trip and individual links and dwells
(Note : Other ranges could be calculated too :
such as the interquartile range--(the
middle 50% -- or the highest/lowest
deciles or 10% groupings.

** Mean deviation (arithmetic scatter)

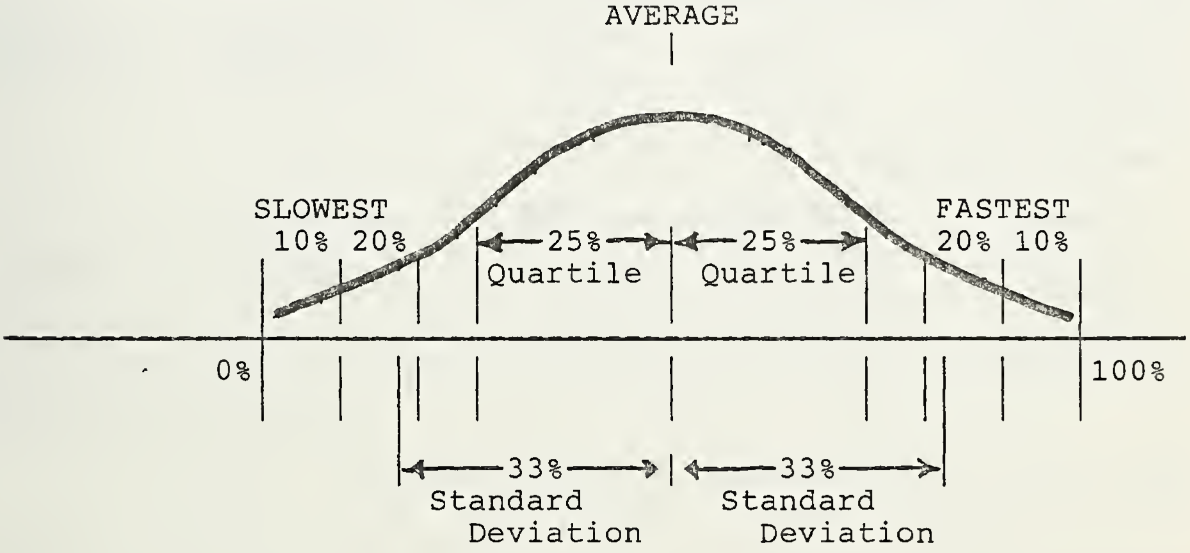
** Standard deviation (statistic variation)
(usually more than mean deviation by 10-20%;
sometimes equal but never less)

** Coefficient of variation, in per cent
(also referred to as the standard deviation percentage)

** % Improvements by LOS thresholds for link travel
(different results for LOS E, LOS D, LOS C)

In its simplest terms, setting LOS thresholds means "throwing out" all slower movements and replacing them with a threshold time. All LOS E, LOS F, LOS F- and LOS F= trips would be replaced by LOS D times, whenever the target threshold is LOS D. If 20% of the times were in the range of LOS E to LOS F=, the lowest 20% of the link or dwell times would be thrown out.

A typical trip distribution is shown below as a typical "bell curve" ranging from the few slowest trips through the primary grouping around the average, and ending at the few fastest trips. The standard deviation represents the span within which 2/3 of the sampled trips fall. Another way to look at the spread is to consider the distribution in 10% or 25% segments, so that there is a top 10% and top 20%, as well as a first quartile, which is the top 25%, the second, third and fourth quartiles. In terms of transit performance, our primary focus is likely to be on the fourth quartile or the slowest 25%.



The original Boston Elevated Company posted commitments to service -- "10 minutes to Park Street", "12 minutes to Summer Street" -- but without any promises regarding variance or certainty. The Boston Elevated managers apparently believed that they could maintain an average of 10 or 12 minutes, with some slight insignificant variance. Sadly, these signs were taken down as part of transit "modernization". Today's equivalent signs would probably read, "17 minutes to Park Street, +/- 5 minutes." Such a claim would represent a 30% variation.

Such variations are not new. In May 1969 a Bruce Campbell & Assoc. study for the MBTA's Beacon Street Line concluded that "the primary problem of outbound operations is due to poor headway regularity (10 seconds to 15 minutes) of trains outbound at the portal."

In the year 1990, we find conditions which seem wearily similar to the 1969 description. It would appear that the difficulties of maintaining consistent Green Line operations have been a problem at least since the inception of the MBTA in 1964.

====== RESULTS OF TARGETED IMPROVEMENTS TO 96 SAMPLE TRIPS =======

There are two approaches to targeting improvements to trip speed. One is to limit the improvement to link times only, leaving all dwell times unchanged. The second is to improve both link and dwell times up to the targeted threshold.

.....LINK TIME IMPROVEMENTS ONLY

The base case is the unaltered 96 trips as recorded, with an average trip speed of 10.4 MPH and an average link speed of 13.9 MPH. If the target threshold is raised and met to LOS E, then C and finally B, the results are :

LINK TARGET THRESHOLD	LINK SPEED	TRIP SPEED	LINK SPEED IMPROVEMENT	TRIP SPEED IMPROVEMENT
Base Case	13.9 MPH	10.4 MPH	0	0
LOS E	15.7 MPH	11.5 MPH	12.6%	10.0%
LOS C	17.1 MPH	12.3 MPH	22.9%	18.3%
LOS B	18.2 MPH	13.0 MPH	31.2%	25.0%

As defined earlier in Table 1 (page 9), LOS E represents 55% of the best attainable speed, LOS C corresponds to 64%, and LOS B to 71%.

Because link speed by itself should not be significantly affected by peak hour loading, the stable operation of the Green Line would mean that LOS B or better should be possible, since this would mean operating in a fairly wide band ranging from 71% to 100% of best speed. If we permit a 10% allowance for the effects of car loading on acceleration and deceleration, then the operating band would be 71% to 90%. This implies holding within link schedules to +/- 10%, which appears a reasonable and attainable goal for a well-run system.

..........BOTH LINK AND DWELL IMPROVEMENTS

Improvements to both link and dwell times require a concerted effort to monitor train position and loading. Starters at key locations such as Park, Arlington and Copley would be required to check on any slippage from schedule and to prevent any one train or car in a train from becoming overloaded.

It might be necessary to impose additional policies similar to those on buses, which preclude standing on the front steps close to the driver. For the Green Line LRV cars, the steps would be painted yellow (similar to the yellow high platform line) and passengers would not be allowed to stand on the yellow -- the stairs. The loss of standing room for passengers on the stairs would be more than made up for by greater dispersal of passengers throughout the train and less crowding around the critical doors and stairs. Passengers could step down onto the stairs to make a pathway for exiting riders (similar to stepping out onto a rapid transit high platform, then re-entering the train).

With programs in place to limit excessive dwell times and to keep the trains moving evening in the peak hour, target thresholds for both link and dwell performance become possible. The total trip speed now becomes the target for improvement, with an LOS C standard producing a 33% improvement in average speed, while an LOS B target would yield a 48% speed improvement. The reduction in ridership on the average trip would be only a few percent, so that the efficiency improvements possible would be in the 30% to 45% range.

============ ADDED RIDERSHIP FROM SERVICE IMPROVEMENTS ========

Any improvements in service should result in added ridership. Normally, most of these riders would come from car pools or existing bus trips -- with only a minority switching from driver-only cars. However, coordinated programs to encourage ride-sharing and improve bus service should serve ultimately to achieve the goal of reducing the number of single-occupant cars in the commuter stream.

There is a relationship (or "elasticity") between ridership and trip time, just as similar relationships exist between ridership and transit fares. Typically, raising fares by X percent produces a drop in ridership of 20%X to 35%X. Technically, the elasticity is noted as -0.20 to -.35. Similarly, increased travel time produces a drop in ridership, with an elasticity of -0.39.

(Ref.: Wayne Talley, Introduction to Transportation,
Southwestern Publishing Company, 1983. p. 300.)

If travel times are reduced, elasticity similarly applies, but the result is more riders. For example, a 10% travel time reduction would yield a peak hour work-trip ridership gain of 3.9%. This gain would result from bringing all links up to a target threshold of LOS E. Similarly, thresholds of LOS C and LOS B would yield ridership increases of 7.1% and 9.8% respectively, as summarized on the next page.

LINK TARGET THRESHOLD	TRIP SPEED	TRIP SPEED IMPROVEMENT	INCREASED RIDERSHIP
Base Case	10.4 MPH	0	0
LOS E	11.5 MPH	10.0%	3.9%
LOS C	12.3 MPH	18.3%	7.1%
LOS B	13.0 MPH	25.0%	9.8%

================ OTHER RESEARCH CONCEPTS AND NEEDS ============

MBTA managers have consistently resisted any comparison of Boston transit performance with any other transit system, including the BEC and MTA of years past. A survey should be conducted of how cities around the world monitor their rail systems for schedules and variability in service. Schedule performance over a period of 50-60 years should be considered when system longevity permits.

Further research needs to be done on the psychological effects of trip variability. Such studies would help immensely in terms of identifying the desirable target levels of transit service, and in understanding the psychology of why people do or do not take transit, and under what conditions of service they could be make more enthusiastic about using transit.

For example, consider the effects of time variability on a work trip, using any mode. Consider 6 trips which took 25 minutes, 35 minutes, 25 minutes, 35 minutes, 30 minutes and 30 minutes. The average trip is 30 minutes, the longest is 35 and the shortest is 25 minutes. The standard deviation is 4.1 minutes and the % deviation is 13.6%. generally, most people would consider such trip performance quite acceptable and would rate the service as at lest good.

Now suppose the last trip took 40 minutes, rather than 30. The average increases to 31.7 and the % deviation to 17.4%. Most people would be unhappy with the 40 minute trip, but would rate overall performance as OK.

Suppose the last trip deteriorated to 60 minutes, twice as long as the original average trip. Now the average trip is 35 minutes and the % deviation is 34%. Most people would consider the overall performance of the 6 trips to be intolerable.

Oddly enough, if the worst trip were cut to 45 minutes, and all other trips raised to 35 minutes, some riders would be happier. The average trip time would be higher, but the variability would be lower.

TABLE 18. EFFECTS OF 5 TRIPS PLUS A VARIABLE 6TH TRIP

LAST TRIP TIME	AVERAGE OF 6 TRIPS	STANDARD DEVIATION	ST.DEV. PERCENT	TYPICAL RATING
30 min	30.0	4.1 min	13.6%	Good
40 min	31.7	5.5 min	17.4%	OK
50 min	33.3	8.5 min	25.5%	Poor
60 min	35.0	11.9 min	34 %	Intolerable

How do ordinary people assess these tradeoffs? Some good surveys and interviews could be very revealing.

==

Other offbeat surveys could be revealing. How were the Red Sox able to average 31,612 attendees for 80 home games -- a figure of 92% capacity, despite the history of conflict and anguish associated with the team? Annual attendance went from 1.1 million in 1960 to 652,000 in 1965, then surging to 1.6 million in 1970, 2 million in 1980 and 2.5 million in 1990. The old park stayed substantially the same, transit service followed the fortunes of the Green Line, and ticket prices rose dramatically. Did the Red Sox do something to make the fans feel welcome -- an approach quite foreign to the normal machinations of MBTA management?

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Other state agencies have performance rating systems which may provide useful experience and analogies. For example, the Mass Department of Public Works has a program to monitor the use of road salt and identify areas where excessive amounts of salt are used. The DPW Maintenance Division has adopted a materials Control System and a related performance rating system which compares actual salt applications with the target or goal for salt application. The Division sets certain target usage rates and after a snow storm compares the actual salt use with the target rates. (see Draft Generic EIR, "Snow and Ice Control Program", March 1989, p. 3-76)

RATING OF PERFORMANCE	ACTUAL SALT USE VS. TARGET RATES
Excellent	.... Actual use within 0-20% of Target
Good	.... Actual use within 20-50% of Target
Fair	.... Actual use within 50-100% of Target
Poor	..............Actual more than 100% greater than Target.

================ SUMMARY RESULTS OF SAMPLING AND ANALYSIS =======

The overall analysis of the 96 trips on the Boston College branch of the outbound Green Line produced a range of results, beginning with definitions and ending with statistical analysis.

1. The focus of transit performance evaluations should be on bad trips and how to improve them.

2. To understand what makes for bad trips, we need to consider the variations in service, and key in level of service definitions to these variations.

3. Satisfactory definitions for transit "Level-of-Service" do not exist in the literature. LOS A was defined as being within 90% of the best recorded time in the sample. Separate definitions are necessary for dwell and link LOS F, because loading times are more sensitive to peak hour operations than are link speeds.

4. Generally, the LOS measures work quite well, with the exception of certain stations with very low dwell times, such as the Boston University stations at night. The result is frequent occurrence of LOS F or worse, even for moderately rapid stops. A somewhat less stringent LOS formula is probably justified for dwells. The LOS formula for speeds between stations works very well.

5. Because speed and loading are separate values of performance, they can be combined into one performance measure called the "efficiency" -- which is the product of speed and loading. The best actual trip efficiency actually measured was 70%, which is very good and indicates peak hour system potential.

6. An analysis form was designed, using computer spreadsheet methods. The form took raw data on trip times and loadings and automatically performed time and speed calculations, as well as statistical comparisons with other trips.

7. Of the 96 trips recorded, 95 were complete for data. The average data for all trips showed :

	* AVERAGE, ALL TRIPS	AVERAGE, PEAK HOUR ONLY	...RANGE
LOADING	48 %	60.4 %	19 % - 99 %
DWELL	33 sec	41 sec	19 - 155 sec
SPEED	10.4 MPH	8.9 MPH	4.8 - 12.9 MPH
EFFICIENCY	28 %	34 %	9 % - 70 %

8. Listings were also made of the 5 Best and 5 Worst total trips as well as for each individual station stop and link connection.

9. The scatter of the data was calculated using the Standard Deviation formulas, with the results presented in percentage form. The wide Green Line variations contrast with other industries which provide product with a standard deviation in the 1-3% range:

	* STANDARD DEV...ALL TRIPS	STANDARD DEV...PEAK HOUR ONLY
LOADING	50 %	30 %
DWELL	61 %	66 %
SPEED	26 %	30 %
EFFICIENCY	51 %	43 %

10. Improved service would also produce increases in ridership. Cutting travel time by 10% would yield ridership growth of 3.9%, equivalent to bringing all trip links up to LOS E. More stringent LOS goals could result in ridership increases of 7.1 % and 9.8%.

CONCLUSIONS AND RECOMMENDATIONS

1. There should be the formalization of a trip sampling function by using regular T riders to gather data wherever possible. Base data would be submitted to a transit analysis group called the Ridership CONSORTIUM, which would be entirely independent of independent of MBTA management. The Consortium staff would take the trip data and run it through computer analysis for circulation to the Advisory Board, MBTA and general public.

2. The sampling frequency on the Green Line should be higher than other lines because of the numerous branches. The primary focus should be on moving observers recording train loadings and progress, while fixed-observer sighting at individual locations (such as the peak load point) should be concentrated but on a less frequent schedule. Ideally, each branch should be subject to about 50 annual trips in one direction during the peak hour, with another 50 covering trips in various off-peak periods. This would translate into about 200 annual round trips on each line. Setting up data input would be critical, to assure both speed and accuracy of processing such vast amounts of trip data.

3. A definition for transit "Level-of-Service" should be adopted. This report develops a letter grade designation for Level of Service, analogous to traffic level of service. To account for many cases of severe degradation of service, added LOS designations of LOS F- and LOS F= were provided to account for cases where speeds dropped to less than 40% of best measured speeds.

4. The MBTA appears to be operating the Green Line with inadequate monitoring of performance and an inability to prevent the system from clotting into bunched up trains.

5. The MBTA Advisory Board should be expanded in function to consider more than just the financial operations of the MBTA. It should be given work responsibilities which more effectively make the Advisory Board a ridership advocacy group. If all else fails, the Advisory Board members should be elected, rather than appointed, to 2-year terms.

6. The system needs more incentives to perform well. At least 20% of all salaries should be variable, based on the degree of excellence in service offered.

7. There should be a historical performance review of Green Line ridership trends and performance over the past 50 years, including all efforts by the Boston Elevated, MTA and MBTA to make ridership and speed measurements.

8. The MBTA must develop administrative expertise to monitor, control, and encourage better service and performance.

Submitted by :

Stephen H. Kaiser, PhD
Traffic and Transportation Engineer

```
 B O S T O N   C O L L E G E   OUTBOUND # 1  SHK  Rider     AVER. TRIP SPEED =   9.3  LOS E
 WEDNESDAY, OCTOBER 26, 1977    Typed by:    SHK  FEB.17, 89  Previous Worst =   4.8  LOS F-
 ..Begin Trip  4:30 P.M.        Checked by: SHK  APR.16, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max130 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |42\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK
PCC (two)   |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
=============================================================================================
PARK STREET | 28:00-28:50|100%  -% - %| 50 - 14 = 36 F-| --    --   --     --     -- |131   --
BOYLSTON    | 30:20-30:30|100%  -% - %| 10*- 10 =  0* A| 90 -  42 = 48  F 1500' 11.4 | 88  202
ARLINGTON   | 33:55-34:10|100%  -% - %| 15 -  9 =  6  B|205 - 56 =149 F= 2000'  6.7 | 66  260
COPLEY      | 35:50-36:05|100%  -% - %| 15 - 11 =  4  A|100 - 44 = 56 F- 1600' 10.9 |112  740
AUDITORIUM  | 38:15-38:25|100%  -% - %| 10 -  9 =  1  A|130 - 75 = 55  D 2800' 14.7 | 85  225
KENMORE     | 40:10-40:30|100%  -% - %| 20 -  9 = 11  D|105 - 51 = 54  F 2250' 14.6 |208  315
BLANDFORD   | 41:30-42:35|100%  -% - %| 65 -  5 = 60 F=| 60 - 37 = 23  D 1100' 12.5 | 78  147
B.U.EAST    | 43:25-43:35|100%  -% - %| 10 -  8 =  2  A| 50 - 39 = 11  B 1400' 19.1 |180  154
B.U.CENTRAL | 44:25-45:00|100%  -% - %| 35 -  8 = 27 F=| 50 - 21 = 29 F-  750' 10.2 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  230 - 83 =147  |790 -365 =425   13400'   --  |1021 2221
    Ever ...  |  AVERAGE: 100% NA% NA%   26 -  9 = 16 E | 99 - 46 = 53  F 1675' 11.6 | 11  278
^ = Worst Time|  MAXIMUM: 100% NA% NA%   65    14   60  |205   75  149    2800' 19.1 |208Worst
    Ever .....|  MINIMUM: 100% NA% NA%   10     5    0  | 50   21   11     750'  6.7 |   Dwell
--------- MEAN DEVIATION:  LOADING NA% LOST DWELL18 sec|LOST LINK 25 sec          21%|Worst
     STANDARD DEVIATION:  LOADING NA% LOST DWELL19 sec|LOST LINK 40 sec          38%|Link 740
---------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     4:.28:.00 <<< :<<<     --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    4:.44:.25  16 :.25    9.3   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :- 50 SEATS + 116 STANDEES                 ------------------------------------

     LINK     SUPPOSE ALL LINK TIMES WERE
   EFFICIENCY IMPROVED SO NONE WERE WORSE
   THIS TRIP  THAN LOS .. E / C / B
========================================
PARK     -  |                          |
BOYL    NA  |     THE       NA  NA  NA |
ARLI    NA  |     LINK      NA  NA  NA |
COPL    NA  |EFFICIENCIES   NA  NA  NA |
AUDI    NA  |    WOULD      NA  NA  NA |
KENM    NA  |     BE        NA  NA  NA |
BLAN    NA  |    ....       NA  NA  NA |
BU.E    NA  |               NA  NA  NA |
BU.C    NA  |               NA  NA  NA |
========================================
        NA    AVERAGE LINK  NA  NA  NA
  GAIN IN RIDERS :
...Link Improvements only   NA  NA  NA
...Link & Dwell Improvements
                            NA  NA  NA
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
======================================

Trip notes were recorded with a sweep second watch, with times reported to the nearest five seconds.

No record was made of passenger loadings.

```
 B O S T O N  C O L L E G E   OUTBOUND # 2  SHK  Rider      AVER. TRIP SPEED =   4.8  LOS F=
.... TUESDAY, JULY 28, 1981     Typed by:   SHK  APR.16, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:40 P.M.       Checked by: SHK  APR.16, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max130 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|   TIME     |42\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
PCC (two)   |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
============================================================================================
PARK STREET  | 45:35-46:55|100% 80% 86%| 80 - 14 = 66 F=| --   --   --    --     -- |131  --
BOYLSTON     | 47:50-48:10|100% 85% 90%| 20 - 10 = 10  C| 55 - 42 = 13  B 1500' 18.6 | 88  202
ARLINGTON    | 49:35-50:15|100% 90% 93%| 40 -  9 = 31 F=| 85 - 56 = 29  C 2000' 16.0 | 66  260
COPLEY      6:02:35-03:35|100% 90% 93%| 60 - 11 = 49 F=|740^- 44 =696^F= 1600'  1.5^|112  740
AUDITORIUM   | 07:20-08:00|100%100%100%| 40 -  9 = 31 F=|225^- 75 =150^F= 2800'  8.5^| 85  225
KENMORE      | 12:50-13:35|100%100%100%| 45 -  9 = 36 F=|290 - 51 =239 F= 2250'  5.3 |208  315
BLANDFORD    | 14:25-15:00|100%100%100%| 35 -  5 = 30 F=| 50 - 37 = 13  B 1100' 15.0 | 78  147
B.U.EAST     | 15:55-16:50|100% 97% 98%| 55 -  8 = 47 F=| 55 - 39 = 16  C 1400' 17.4 |180  154
B.U.CENTRAL  | 17:30-17:50|100% 97% 98%| 20 -  8 = 12  D| 40 - 21 = 19  E  750' 12.8 | 73  178
============================================================================================
* = Best Time |  TOTALS :  --  --  --  395 - 83 =312   |1540-365 =1175  13400'   --  |1021 2221
   Ever ...   |  AVERAGE: 100% 93% 95%  44 -  9 = 35 F=|193 - 46 =147 F= 1675'  5.9 | 11  278
^ = Worst Time|  MAXIMUM: 100%100%100%  80   14   66   |740   75  696     2800' 18.6 |208Worst
   Ever .....|  MINIMUM: 100% 80% 86%  20    5   10   | 40   21   13      750'  1.5 |   dwell
~~~~~~~~  MEAN DEVIATION:   LOADING  5% LOST DWELL 15sec|LOST LINK 161sec          109%|Worst
     STANDARD DEVIATION:   LOADING  5% LOST DWELL 17sec|LOST LINK 222sec          174%|link 740
--------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME       TIME    MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --      --    |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<   |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     5:.45:.35 <<< :<<<    --    |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    6:.17:.30  31 :.55   4.8    |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------| <<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |    LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ----------------------------------------
```

```
     LINK     SUPPOSE ALL LINK TIMES WERE
  EFFICIENCY IMPROVED SO NONE WERE WORSE
  THIS TRIP  THAN LOS .. E / C / B
=======================================
PARK    -   |                          |
BOYL  66%   |    THE       66% 66% 66% |
ARLI  59%   |    LINK      59% 59% 69% |
COPL   6%   |EFFICIENCIES  49% 62% 72% |
AUDI  31%   |   WOULD      49% 62% 72% |
KENM  18%   |    BE        53% 67% 77% |
BLAN  74%   |   ....       74% 74% 74% |
BU.E  71%   |              71% 71% 77% |
BU.C  51%   |              51% 65% 75% |
=======================================
     23%    AVERAGE LINK 57% 65% 73%
 GAIN IN RIDERS :
...Link Improvements only 148%183%217%
...Link & Dwell Improvements
                           NA  NA  NA
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
======================================

All times were recorded with a sweep second watch with accuracy to the nearest 5 seconds.

The day after this trip, I made inquiry to the MBTA to determine what caused the severe delays along the Green Line.
Two days later, the MBTA called back to say that there were no reports of anything unusual on the Green Line on the day in question.

This lack of feedback on a near system breakdown prompted me to begin sampling Green Line trips, initially using a word processor on my then state-of-the-art Zenith Z-89 computer.

```
 B O S T O N   C O L L E G E   OUTBOUND # 3  SHK  Rider     AVER. TRIP SPEED =  11.8  LOS C
.... MONDAY, AUGUST 24, 1981    Typed by:    SHK  FEB.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:55 P.M.       Checked by: SHK  APR.17, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders| DWELL TIME    L| STATION-STATION or "LINK"  | WORST |
9  STATIONS|   TIME     |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |   LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS    MPH  |DWELL  |
=============================================================================================|
PARK STREET | 57:59-58:45|100% 40% 58%| 46 - 14 =  32  F| --   --   --    --     -- |131  -- |
BOYLSTON    | 59:59-00:16|100% 50% 65%| 17 - 10 =   7  B| 74 - 42 = 32  D 1500' 13.8 | 88  202|
ARLINGTON  6:01:46-02:16|100% 33% 53%| 30 -  9 =  21  F| 90 - 56 = 34  D 2000' 15.2 | 66  260|
COPLEY      | 03:14-03:42|100% 33% 53%| 28 - 11 =  17  D| 58 - 44 = 14  B 1600' 18.8 |112  740|
AUDITORIUM  | 05:19-05:42|100% 40% 58%| 23 -  9 =  14  D| 97 - 75 = 22  B 2800' 19.7 | 85  225|
KENMORE     | 07:15-07:49|100% 15% 41%| 34 -  9 =  25 F-| 93 - 51 = 42  E 2250' 16.5 |208  315|
BLANDFORD   | 08:35-08:52|100% 17% 42%| 17 -  5 =  12 F-| 46 - 37 =  9  B 1100' 16.3 | 78  147|
B.U.EAST    | 09:33-09:52|100% 20% 44%| 19 -  8 =  11  D| 41 - 39 =  2  A 1400' 23.3 |180  154|
B.U.CENTRAL | 10:55-11:10|100% 25% 48%| 15 -  8 =   7  C| 63 - 21 = 42 F=  750'  8.1 | 73  178|
==============================================================================================
* = Best Time |  TOTALS :  --   --   --  229 - 83 =146   |562 -365 =197   13400'   -- |1021 2221
   Ever ...   |  AVERAGE: 100% 30% 51%  25 -  9 = 16   E | 70 - 46 = 25  C 1675' 16.3 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 50% 65%  46   14    32    | 97   75   42    2800' 23.3 |208Worst|
   Ever .....|  MINIMUM: 100% 15% 41%  15    5     7    | 41   21    2     750'  8.1 |   Dwell|
--------    MEAN DEVIATION:  LOADING  8% LOST DWELL 8 sec|LOST LINK 13 sec         17%|Worst   |
       STANDARD DEVIATION:  LOADING  8% LOST DWELL 8 sec|LOST LINK 14 sec         30%|Link 740|
---------------------------------------------------------------------------------------------
                    DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                      Feet      TIME       TIME     MPH  |  DWELL  .0 - .4 => A  <=  .0 - .2 LINK
Leave Door ...        --     <:<<<:<<<      --       --  |  DWELL  .4 - .8 => B  <=  .2 - .4 LINK
Arrive Platform     2,500    <:<<<:<<< <<< :<<<   <<<<<  |  DWELL  .8 -1.2 => C  <=  .4 - .6 LINK
Train Arrives         --     5:.57:.59 <<< :<<<     --   |  DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK
Transit Trip       13,400    6:.10:.55  12 :.56    11.8  |  DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK
Arrive Door ...     3,800    <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK
Total Trip ...     19,700    <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK
Straight Line      12,500    <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 3.0  or  => F= <= 1.5  or  LINK
---------------------------------------------------------| <<<<<<<<<<<> more             more   |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge         |      LEVEL OF SERVICE CRITERIA       |
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ----------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE     ======================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================
PARK    -    |                        |
BOYL  33%    |    THE      34% 38% 44%|
ARLI  40%    |    LINK     44% 44% 49%|
COPL  40%    |EFFICIENCIES 40% 40% 40%|
AUDI  41%    |   WOULD     41% 41% 41%|
KENM  32%    |    BE       40% 40% 40%|
BLAN  33%    |   ....      33% 33% 33%|
BU.E  40%    |             40% 40% 40%|
BU.C  15%    |             23% 29% 34%|
=======================================
      33%    AVERAGE LINK 36% 38% 39%
  GAIN IN RIDERS :
...Link Improvements only  9% 15% 18%
...Link & Dwell Improvements
                          10% 20% 33%
 B O S T O N  C O L L E G E  OUTBOUND # 4  SHK  Rider     AVER. TRIP SPEED =  14.5  LOS B
... MONDAY, SEPTEMBER 21, 1981  Typed by:   SHK  FEB.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  2:00 P.M.       Checked by: SHK  APR.17, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
============================================================================================
PARK STREET  | 03:46-04:15|100%   2% 32%|  29 - 14 = 15  C|  --    --    --     --     -- |131   --
BOYLSTON     | 05:08-05:25|100% 12% 39%|  17 - 10 =  7  B|  53 - 42 = 11  B 1500' 19.3 |  88  202
ARLINGTON    | 06:54-07:18|100% 16% 41%|  24 -  9 = 15  E|  89 - 56 = 33  C 2000'.15.3 |  66  260
COPLEY       | 08:05-08:30|100% 33% 53%|  25 - 11 = 14  D|  47 - 44 =  3  A 1600' 23.2 |112  740
AUDITORIUM   | 09:57-10:15|100% 15% 41%|  18 -  9 =  9  C|  87 - 75 = 12  A 2800' 21.9 |  85  225
KENMORE      | 11:31-11:51|100%  0% 30%|  20 -  9 = 11  D|  76 - 51 = 25  C 2250' 20.2 |208  315
BLANDFORD    | 12:31-12:45|100%  0% 30%|  14 -  5 =  9  E|  40 - 37 =  3  A 1100' 18.8 |  78  147
B.U.EAST     | 13:24-13:45|100% 10% 37%|  21 -  8 = 13  E|  39*- 39 =  0* A 1400' 24.5*|180  154
B.U.CENTRAL  | 14:15-14:43|100%  8% 36%|  28 -  8 = 20 F-|  30 - 21 =  9  C  750' 17.0 |  73  178
============================================================================================
* = Best Time  |  TOTALS :  --   --   --  196 - 83 =113   |461 -365 = 96    13400'   -- |1021 2221
    Ever ...   |  AVERAGE: 100% 11% 38%  22 -  9 = 13  D|  58 - 46 = 12  B 1675' 19.8 |  11  278
^ = Worst Time|  MAXIMUM: 100% 33% 53%  29    14    20    |  89    75    33     2800' 24.5 |208Worst
    Ever .....|  MINIMUM: 100%  0% 30%  14     5     7    |  30    21     0      750' 15.3 |    Dwell
--------    MEAN DEVIATION:   LOADING   6% LOST DWELL 4 sec|LOST LINK  9 sec          11%|Worst
      STANDARD DEVIATION:   LOADING   7% LOST DWELL 4 sec|LOST LINK 11 sec          17%|Link 740
--------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                    Feet      TIME       TIME      MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<      --        --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     2:.03:.46 <<< :<<<     --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400   2:.14:.15  10 :.29    14.5  |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 3.0   or  => F=  <= 1.5   or  LINK
-------------------------------------------------------- |<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                ------------------------------------------

       LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ========================================
   THIS TRIP   THAN LOS .. E / C / B
========================================
PARK    -   |
BOYL  25%   |     THE        25% 25% 25% |
ARLI  25%   |    LINK        25% 25% 30% |
COPL  38%   |EFFICIENCIES 38% 38% 38% |
AUDI  46%   |    WOULD       46% 46% 46% |
KENM  28%   |     BE         28% 28% 32% |
BLAN  28%   |    ....        28% 28% 28% |
BU.E  30%   |                30% 30% 30% |
BU.C  26%   |                26% 26% 28% |
========================================
     30%    AVERAGE LINK 30% 30% 32%
  GAIN IN RIDERS :
...Link Improvements only  0%  0%  7%
...Link & Dwell Improvements
                          3%  6% 16%
 B O S T O N   C O L L E G E   OUTBOUND # 5  SHK  Rider     AVER. TRIP SPEED =  12.5  LOS C
....TUESDAY, OCTOBER 5, 1981    Typed by:    SHK  FEB.17, 89  Previous Worst =   4.8  LOS F-
 ..Begin Trip  8:00 P.M.        Checked by: SHK  APR.16, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST  |
9   STATIONS|    TIME     |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT  |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=============================================================================================|
PARK STREET  | 04:32-05:11|100% 25% 48%| 39 - 14 = 25  E| --   --   --     --     -- |131   - |
BOYLSTON     | 06:09-06:25|100% 30% 51%| 16 - 10 =  6  B| 58 - 42 = 16  B 1500' 17.6 | 88  202|
ARLINGTON    | 07:50-08:27|100% 40% 58%| 37 -  9 = 28 F=| 85 - 56 = 29  C 2000' 16.0 | 66  260|
COPLEY       | 09:20-09:48|100% 40% 58%| 28 - 11 = 17  D| 53 - 44 =  9  B 1600' 20.6 |112  740|
AUDITORIUM   | 11:27-11:42|100% 40% 58%| 15 -  9 =  6  B| 99 - 75 = 24  B 2800' 19.3 | 85  225|
KENMORE      | 13:08-13:33|100% 35% 55%| 25 -  9 = 16  E| 86 - 51 = 35  D 2250' 17.8 | 61  315|
BLANDFORD    | 14:16-14:47|100% 35% 55%| 31 -  5 = 26 F=| 43 - 37 =  6  A 1100' 17.4 |208  147|
B.U.EAST     | 15:48-16:10|100% 35% 55%| 22 -  8 = 14  E| 61 - 39 = 22  C 1400' 15.6 |180  154|
B.U.CENTRAL  | 16:40-17:11|100% 35% 55%| 31 -  8 = 23 F-| 30 - 21 =  9  C  750' 17.0 | 73  178|
==============================================================================================
* = Best Time |  TOTALS :  --   --   --  244 - 83 =161   |515 -365 =150    13400'    -- |1021 2221
    Ever ...  |  AVERAGE: 100% 35% 55%  27 -  9 = 18  E | 64 - 46 = 19  C 1675' 17.7 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 40% 58%  39    14    28   | 99   75   35     2800' 20.6 |208Worst|
    Ever .....|  MINIMUM: 100% 25% 48%  15     5     6   | 30   21    6      750' 15.6 |   Dwell|
~~~~~~~~~     MEAN DEVIATION:   LOADING   3% LOST DWELL 8 sec|LOST LINK  9 sec           6%|Worst   |
       STANDARD DEVIATION:   LOADING   3% LOST DWELL 8 sec|LOST LINK 10 sec          10%|Link 740|
--------------------------------------------------------------------------------------------- 
                 DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST|
                   Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK|
Leave Door ...     --     <:<<<:<<<      --      --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK|
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK|
Train Arrives      --     8:.04:.32 <<< :<<<    --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK|
Transit Trip    13,400    8:.16:.40  12 :.08   12.5    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK|
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK|
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK|
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 3.0  or  => F=  <= 1.5  or  LINK|
-------------------------------------------------------|<<<<<<<<<<<> more              more     |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES         ------------------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
    EFFICIENCY IMPROVED SO NONE WERE WORSE      ======================================
    THIS TRIP  THAN LOS .. E / C / B
======================================
PARK    -    |                            |
BOYL  35%    |    THE         35% 35% 35% |
ARLI  34%    |    LINK        34% 34% 39% |
COPL  48%    |EFFICIENCIES    48% 48% 48% |
AUDI  44%    |    WOULD       44% 44% 44% |
KENM  34%    |     BE         34% 39% 45% |
BLAN  47%    |    ....        47% 47% 47% |
BU.E  35%    |                35% 35% 42% |
BU.C  39%    |                39% 39% 42% |
======================================
      39%    AVERAGE LINK 39% 40% 43%
  GAIN IN RIDERS :
...Link Improvements only  0%  3% 10%
...Link & Dwell Improvements
                          10% 16% 28%
```

```
 B O S T O N   C O L L E G E   OUTBOUND # 6  SHK  Rider     AVER. TRIP SPEED =  11.4  LOS C
....TUESDAY, OCTOBER 13, 1981   Typed by:    SHK  FEB.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  3:45 P.M.        Checked by: SHK  APR.17, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST
9   STATIONS |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV |  IN    OUT|SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
=============================================================================================
PARK STREET  | 44:05-45:05|100% 75% 83%| 60 - 14 = 46 F=|  --   --   --     --    -- |131   --
BOYLSTON     | 45:55-46:20|100% 85% 90%| 25 - 10 = 15  D|  50 - 42 =  8  A 1500' 20.5 | 88  202
ARLINGTON    | 47:46-48:13|100% 70% 79%| 27 -  9 = 18  F|  86 - 56 = 30  C 2000' 15.9 | 66  260
COPLEY       | 49:04-49:34|100% 25% 48%| 30 - 11 = 19  E|  51 - 44 =  7  A 1600' 21.4 |112  740
AUDITORIUM   | 51:08-51:30|100%  5% 34%| 22 -  9 = 13  D|  94 - 75 = 19  B 2800' 20.3 | 85  225
KENMORE      | 52:54-53:24| 70%  2% 22%| 30 -  9 = 21  F|  84 - 51 = 33  D 2250' 18.3 |208  315
BLANDFORD    | 54:05-54:30| 80%  2% 25%| 25 -  5 = 20 F=|  41 - 37 =  4  A 1100' 18.3 | 78  147
B.U.EAST     | 55:59-56:16|100%  3% 32%| 17 -  8 =  9  C|  89 - 39 = 50 F- 1400' 10.7 |180  154
B.U.CENTRAL  | 57:25-57:46|100%  5% 34%| 21 -  8 = 13  E|  69 - 21 = 48 F=  750'  7.4 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  257 - 83 =174  |564 -365 =199   13400'    -- |1021 2221
    Ever ...  |  AVERAGE:  94% 30% 50%  29 -  9 = 19  F| 71 - 46 = 25  C 1675' 16.2 | 11  278
^ = Worst Time|  MAXIMUM: 100% 85% 90%  60   14   46  | 94   75   50    2800' 21.4 |208Worst
    Ever .....|  MINIMUM:  70%  2% 22%  17    5    9  | 41   21    4     750'  7.4 |   Dwell
~~~~~~~~    MEAN DEVIATION:  LOADING 26% LOST DWELL 7 sec|LOST LINK 15 sec          22%|Worst
       STANDARD DEVIATION:  LOADING 25% LOST DWELL10 sec|LOST LINK 17 sec          33%|Link 740
---------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED   SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                    Feet      TIME       TIME      MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...       --    <:<<<:<<<      --        --  |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform   2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives        --    3:.44:.05 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400    3:.57:.25  13 :.20    11.4   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
--------------------------------------------------------|<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ----------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE       TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE        ======================================
   THIS TRIP   THAN LOS .. E / C / B
=======================================
PARK    -    |                           |
BOYL  70%    |    THE        70% 70% 70% |
ARLI  59%    |    LINK       59% 59% 69% |
COPL  68%    |EFFICIENCIES   68% 68% 68% |
AUDI  38%    |    WOULD      38% 38% 38% |
KENM  21%    |     BE        21% 23% 26% |
BLAN  20%    |    ....       20% 20% 20% |
BU.E  11%    |               13% 17% 19% |
BU.C  10%    |               17% 21% 25% |
=======================================
      32%     AVERAGE LINK  35% 37% 40%
  GAIN IN RIDERS :
...Link Improvements only   9% 16% 25%
...Link & Dwell Improvements
                            16% 27% 42%
```

```
 B O S T O N   C O L L E G E   OUTBOUND # 7  SHK  Rider    AVER. TRIP SPEED =  11.1  LOS D
.... MONDAY, NOVEMBER 2, 1981   Typed by:    SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  3:20 P.M.       Checked by: SHK  APR.17, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST  |
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=========================================================================================
PARK STREET  | 23:50-24:30|100%   3% 32%| 40 - 14 =  26  E| --    --    --    --      -- |131  -- 
BOYLSTON     | 26:33-26:50|100%   3% 32%| 17 - 10 =   7  B|123 - 42 = 81 F= 1500'  8.3 | 88  202|
ARLINGTON    | 28:26-28:50|100%   2% 32%| 24 -  9 =  15  E| 96 - 56 = 40  D 2000' 14.2 | 66  260|
COPLEY       | 29:44-30:05|  55%   0% 17%| 21 - 11 =  10  C| 54 - 44 = 10  B 1600' 20.2 |112  740|
AUDITORIUM   | 31:53-32:15|  55%   0% 17%| 22 -  9 =  13  D|108 - 75 = 33  C 2800' 17.7 | 85  225|
KENMORE      | 33:50-34:20|  50%   0% 15%| 30 -  9 =  21  F| 95 - 51 = 44  E 2250' 16.1 |208  315|
BLANDFORD    | 35:07-35:42|  40%   0% 12%| 35 -  5 =  30 F=| 47 - 37 = 10  B 1100' 16.0 | 78  147|
B.U.EAST     | 36:35-36:53|  40%   0% 12%| 18 -  8 =  10  D| 53 - 39 = 14  B 1400' 18.0 |180  154|
B.U.CENTRAL  | 37:30-37:46|  40%   0% 12%| 16 -  8 =   8  C| 37 - 21 = 16  D  750' 13.8 | 73  178|
=========================================================================================
* = Best Time  |  TOTALS :   --   --   --   223 - 83 =140    |613 -365 =248   13400'   -- |1021 2221
    Ever ...   |  AVERAGE:  64%  1% 20%   25 -  9 = 16  E| 77 - 46 = 31  D 1675' 14.9 | 11  278|
^ = Worst Time|  MAXIMUM: 100%  3% 32%   40   14    30    |123   75   81     2800' 20.2 |208Worst|
    Ever .....|  MINIMUM:  40%  0% 12%   16    5     7    | 37   21   10      750'  8.3 |   Dwell
~~~~~~~~  MEAN DEVIATION:   LOADING  9% LOST DWELL 8 sec|LOST LINK 19 sec          16%|Worst
      STANDARD DEVIATION:   LOADING  9% LOST DWELL 8 sec|LOST LINK 23 sec          29%|Link 740
-----------------------------------------------------------------------------------------
               DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                 Feet      TIME        TIME     MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<      --       --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<   |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --     3:.23:.50 <<< :<<<     --    |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   3:.37:.30  13 :.40    11.1   |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<   |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<   |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<   |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------|<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE     ========================================
   THIS TRIP  THAN LOS .. E / C / B
========================================
PARK     -   |
BOYL   11%   |     THE         17%  21%  25%  |
ARLI   19%   |     LINK        19%  21%  25%  |
COPL   26%   | EFFICIENCIES 26%  26%  26%  |
AUDI   12%   |     WOULD       12%  12%  13%  |
KENM    9%   |      BE           9%  11%  13%  |
BLAN   12%   |     ....        12%  12%  12%  |
BU.E    9%   |                    9%   9%   9%  |
BU.C    7%   |                    7%   8%   9%  |
========================================
     12%      AVERAGE LINK  13%  14%  15%
  GAIN IN RIDERS :
...Link Improvements only   8%  17%  25%
...Link & Dwell Improvements
                            10%  21%  35%
```

```
 B O S T O N  C O L L E G E  OUTBOUND # 8  SHK  Rider     AVER. TRIP SPEED =   7.8  LOS F-
..WEDNESDAY, NOVEMBER 4, 1981   Typed by:   SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  2:55 P.M.        Checked by: SHK  APR.17, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
=============================================================================================
PARK STREET | 56:35-58:10| 90%  0% 27%| 95 - 14 = 81 F=| --   --   --     --     -- |131  --
BOYLSTON    | 59:57-00:25| 80%  0% 24%| 28 - 10 = 18  E|107 - 42 = 65 F= 1500'  9.6 | 88  202
ARLINGTON  3:02:29-03:25| 85%  0% 26%| 56 -  9 = 47 F=|124 - 56 = 68 F- 2000' 11.0 | 66  260
COPLEY      | 04:32-05:17| 80%  0% 24%| 45 - 11 = 34 F=| 67 - 44 = 23  C 1600' 16.3 |112  740
AUDITORIUM  | 07:34-08:16| 85%  0% 26%| 42 -  9 = 33 F=|137 - 75 = 62  E 2800' 13.9 | 85  225
KENMORE     | 09:56-10:48| 90%  0% 27%| 52 -  9 = 43 F=|100 - 51 = 49  E 2250' 15.3 |208  315
BLANDFORD   | 11:45-12:34| 90%  0% 27%| 49 -  5 = 44 F=| 57 - 37 = 20  C 1100' 13.2 | 78  147
B.U.EAST    | 14:15-15:14| 85%  0% 26%| 59 -  8 = 51 F=|101 - 39 = 62 F= 1400'  9.5 |180  154
B.U.CENTRAL | 16:00-16:51| 85%  0% 26%| 51 -  8 = 43 F=| 46 - 21 = 25  F  750' 11.1 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  477 - 83 =394   |739 -365 =374   13400'   -- |1021 222
    Ever ...  |  AVERAGE:  86%  0% 26%  53 -  9 = 44 F=| 92 - 46 = 47  F 1675' 12.4 | 11  278
^ = Worst Time|  MAXIMUM:  90%  0% 27%  95   14   81    |137   75   68     2800' 16.3 |208Worst
    Ever .....|  MINIMUM:  80%  0% 24%  28    5   18    | 46   21   20      750'  9.5 |   Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING  1% LOST DWELL12 sec|LOST LINK 18 sec           16%|Worst
     STANDARD DEVIATION:  LOADING  1% LOST DWELL16 sec|LOST LINK 19 sec           23%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME      TIME    MPH    |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --      --    |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<   |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     2:.56:.35 <<< :<<<    --    |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    3:.16:.00  19 :.25    7.8   |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------|<<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES               ---------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE     =====================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================
PARK    -   |                           |
BOYL  11%   |    THE       14% 18% 21%  |
ARLI  11%   |   LINK       13% 16% 18%  |
COPL  17%   |EFFICIENCIES 17% 17% 20%  |
AUDI  13%   |   WOULD      13% 16% 18%  |
KENM  13%   |    BE        13% 17% 20%  |
BLAN  18%   |   ....       18% 18% 21%  |
BU.E  10%   |              14% 18% 21%  |
BU.C  12%   |              14% 17% 20%  |
=======================================
     13%    AVERAGE LINK 14% 17% 20%
  GAIN IN RIDERS :
...Link Improvements only  8% 31% 54%
...Link & Dwell Improvements
                          34% 63% 93%
```

```
 B O S T O N   C O L L E G E   OUTBOUND # 9  SHK  Rider     AVER. TRIP SPEED =   8.6  LOS F
.WEDNESDAY, DECEMBER 30, 1981   Typed by:    SHK  FEB.25, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:50 P.M.        Checked by: SHK  APR.17, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
=========================================================================================
PARK STREET | 56:42-57:55|100% 25% 48%| 73 - 14 = 59 F=| --   --   --    --     --  |131   --
BOYLSTON   5:00:10-00:30|100% 15% 41%| 20 - 10 = 10  C|135 - 42 = 93 F= 1500'  7.6 | 88  202
ARLINGTON   | 02:13-02:34|100%  7% 35%| 21 -  9 = 12  D|103 - 56 = 47  E 2000' 13.2 | 66  260
COPLEY      | 05:40-06:04| 90%  0% 27%| 24 - 11 = 13  C|186 - 44 =142 F= 1600'  5.9 |112  740
AUDITORIUM  | 08:23-08:46| 95%  0% 29%| 23 -  9 = 14  D|139 - 75 = 64  E 2800' 13.7 | 85  225
KENMORE     | 11:03-11:26| 90%  0% 27%| 23 -  9 = 14  D|137 - 51 = 86 F= 2250' 11.2 |208  315
BLANDFORD   | 12:14-12:28| 95%  0% 29%| 14 -  5 =  9  E| 48 - 37 = 11  B 1100' 15.6 | 78  147
B.U.EAST    | 13:07-13:15| 95%  0% 29%|  8*-  8 =  0* A| 39*- 39 =  0* A 1400' 24.5*|180  154
B.U.CENTRAL | 14:07-14:24| 90%  0% 27%| 17 -  8 =  9  C| 52 - 21 = 31 F-  750'  9.8 | 73  178
=========================================================================================
* = Best Time |  TOTALS :   --   --   --  223 - 83 =140  |839 -365 =474   13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  95%  5% 32%   25 -  9 = 16  E|105 - 46 = 59 F- 1675' 10.9 | 11  278
^ = Worst Time|  MAXIMUM: 100% 25% 48%   73   14   59    |186   75  142      2800' 24.5 |208Worst
    Ever .....|  MINIMUM:  90%  0% 27%    8    5    0    | 39   21    0       750'  5.9 |   Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING  7% LOST DWELL 11sec|LOST LINK 37 sec          34%|Worst
     STANDARD DEVIATION:  LOADING  7% LOST DWELL 16sec|LOST LINK 44 sec          69%|Link 740
-----------------------------------------------------------------------------------------
                  DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet     TIME       TIME    MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<     --      --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     4:.56:.42 <<< :<<<    --    |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   5:.14:.07  17 :.25    8.6   |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<> more           more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ------------------------------------
```

```
       LINK     SUPPOSE ALL LINK TIMES WERE
    EFFICIENCY IMPROVED SO NONE WERE WORSE
    THIS TRIP  THAN LOS .. E / C / B
=======================================
PARK     -   |                          |
BOYL   15%   |    THE       25% 32% 37% |
ARLI   22%   |    LINK      22% 27% 32% |
COPL    8%   |EFFICIENCIES 18% 23% 27% |
AUDI   15%   |    WOULD     15% 18% 21% |
KENM   11%   |     BE       15% 19% 22% |
BLAN   21%   |    ....      21% 21% 21% |
BU.E   29%   |              29% 29% 29% |
BU.C   12%   |              15% 19% 22% |
=======================================
      14%     AVERAGE LINK 19% 22% 25%
  GAIN IN RIDERS :
...Link Improvements only 36% 57% 79%
...Link & Dwell Improvements
                          39% 64% 87%
```

```
TRIP NOTES -- OTHER TRAINS AND COMMENTS
========================================

Arrived 4:45 at Science Park Station
Riverside @ Science Park 47:00 in 47:50 out
@ North Station   49:10 in   49:25 out
@ Haymarket   50:30 in   50:58 out
@ Government Center 52:56 in   53:23 out

Boston College @ Gov. Ctr. 53:37 in   54:08 out
                  50% seated
@ B.U. West   16:30 in   16:50 out
```

```
 B O S T O N   C O L L E G E   OUTBOUND #10  SHK  Rider     AVER. TRIP SPEED =  11.4  LOS C
...TUESDAY, JANUARY 5, 1982     Typed by:    SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:25 P.M.        Checked by: SHK  APR.18, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL
=============================================================================================
PARK STREET  | 35:30-37:15|100% 25% 48%|105 - 14 = 91 F=| --   --   --      --    --  |131  --
BOYLSTON     | 38:05-38:45|100% 33% 53%| 40 - 10 = 30 F=| 50 - 42 =  8  A 1500' 20.5 | 88  202
ARLINGTON    | 40:05-40:54|100% 40% 58%| 49 -  9 = 40 F=| 80 - 56 = 24  C 2000' 17.0 | 66  260
COPLEY       | 41:41-42:22|100% 45% 62%| 41 - 11 = 30 F-| 47 - 44 =  3  A 1600' 23.2 |112  740
AUDITORIUM   | 43:44-44:11|100% 40% 58%| 27 -  9 = 18  F| 82 - 75 =  7  A 2800' 23.3 | 85  225
KENMORE      | 45:34-46:00|100% 25% 48%| 26 -  9 = 17  E| 83 - 51 = 32  D 2250' 18.5 |208  315
BLANDFORD    | 46:40-46:58|100% 25% 48%| 18 -  5 = 13 F-| 40 - 37 =  3  A 1100' 18.8 | 78  147
B.U.EAST     | 47:43-48:03|100% 25% 48%| 20 -  8 = 12  D| 45 - 39 =  6  A 1400' 21.2 |180  154
B.U.CENTRAL  | 48:50-49:08|100% 25% 48%| 18 -  8 = 10  D| 47 - 21 = 26 F-  750' 10.9 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  344 - 83 =261   |474 -365 =109   13400'   -- |1021 2221
   Ever ...   |  AVERAGE: 100% 31% 52%  38 -  9 = 29 F=| 59 - 46 = 14  B 1675' 19.3 |113  278
^ = Worst Time|  MAXIMUM: 100% 45% 62% 105    14    91  | 83   75   32    2800' 23.3 |208Worst
   Ever .....|  MINIMUM: 100% 25% 48%  18     5    10  | 40   21    3     750' 10.9 |   Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING  5% LOST DWELL19 sec|LOST LINK 10 sec          13%|Worst
    STANDARD DEVIATION:  LOADING  5% LOST DWELL24 sec|LOST LINK 11 sec          20%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --       --   |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives      --     5:.35:.30 <<< :<<<     --   |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip    13,400   5:.48:.50  13 :.20    11.4   |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0   or  => F=  <= 1.5   or  LINK
------------------------------------------------------|<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES             ---------------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE     =======================================
   THIS TRIP  THAN LOS .. E / C / B
=====================================
PARK    -   |                          |
BOYL  40%   |    THE       40% 40% 40% |
ARLI  37%   |    LINK      37% 37% 41% |
COPL  54%   |EFFICIENCIES  54% 54% 54% |
AUDI  57%   |    WOULD     57% 57% 57% |
KENM  36%   |     BE       36% 39% 45% |
BLAN  44%   |    ....      44% 44% 44% |
BU.E  42%   |              42% 42% 42% |
BU.C  21%   |              25% 32% 37% |
=====================================
     40%     AVERAGE LINK  41% 42% 44%
  GAIN IN RIDERS :
...Link Improvements only  2%  5% 10%
...Link & Dwell Improvements
                          24% 35% 48%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #11  SHK  Rider     AVER. TRIP SPEED =  10.5  LOS D
....TUESDAY, JANUARY 12, 1982   Typed by:    SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:25 P.M.        Checked by: SHK  APR.18, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9   STATIONS|   TIME     |50\ STAND.  |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
============================================================================================
PARK STREET | 25:25-26:10|100% 90% 93%| 45 - 14 = 31  F| --   --   --     --    -- |131  -- |
BOYLSTON    | 27:42-28:09|100% 90% 93%| 27 - 10 = 17  E| 92 - 42 = 50  F 1500' 11.1 | 88  202|
ARLINGTON   | 29:55-30:13|100% 95% 97%| 18 -  9 =  9  C|106 - 56 = 50  E 2000' 12.9 | 66  260|
COPLEY      | 31:20-32:11|100% 93% 95%| 51 - 11 = 40 F=| 67 - 44 = 23  C 1600' 16.3 |112  740|
AUDITORIUM  | 34:17-34:41|100% 50% 65%| 24 -  9 = 15  E|126 - 75 = 51  D 2800' 15.2 | 85  225|
KENMORE     | 36:23-36:46|100% 40% 58%| 23 -  9 = 14  D|102 - 51 = 51  F 2250' 15.0 |208  315|
BLANDFORD   | 37:46-38:19|100% 40% 58%| 33 -  5 = 28 F=| 60 - 37 = 23  D 1100' 12.5 | 78  147|
B.U.EAST    | 39:15-39:27|100% 40% 58%| 12 -  8 =  4  B| 56 - 39 = 17  C 1400' 17.0 |180  154|
B.U.CENTRAL | 39:56-40:13|100% 40% 58%| 17 -  8 =  9  C| 29 - 21 =  8  B  750' 17.6 | 73  178|
============================================================================================
* = Best Time |  TOTALS :  --  --  --  250 - 83 =167   |638 -365 =273   13400'   --  |1021 2221
    Ever ...  |  AVERAGE: 100% 64% 75%  28 -  9 = 19  F| 80 - 46 = 34  D 1675' 14.3 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 95% 97%  51   14   40   |126   75   51     2800' 17.6 |208Worst|
    Ever .....|  MINIMUM: 100% 40% 58%  12    5    4   | 29   21    8      750' 11.1 |   Dwell|
~~~~~~~~   MEAN DEVIATION:   LOADING 20% LOST DWELL11 sec|LOST LINK 16 sec         12%|Worst   |
       STANDARD DEVIATION:   LOADING 18% LOST DWELL11 sec|LOST LINK 17 sec         19%|Link 740|
-------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --    <:<<<:<<<      --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform   2,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --    6:.25:.25 <<< :<<<    --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400   6:.39:.56  14 :.31   10.5    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more              more    |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |     LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ----------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE     =======================================
  THIS TRIP  THAN LOS .. E / C / B        Cleveland Circle  6:05 in    6:30 out  PCC
========================================  Cleveland Circle  6:12:21 in  6:14:06 out  PCC
PARK    -   |                         |   Boston College    6:14:40 in  6:16:22 out  LRV
BOYL  42%   |   THE        49% 62% 72%|   Boston College    6:16:55 in  6:18:12 out  LRV
ARLI  49%   |   LINK       49% 62% 72%|   Riverside         6:18:40 in  6:19:40 out  LRV
COPL  64%   |EFFICIENCIES  64% 64% 75%|      reads "X NO PASSENGERS" in back
AUDI  57%   |   WOULD      57% 63% 73%|   Cleveland Circle  -:--:-- in  6:20:25 out  PCC
KENM  33%   |    BE        33% 43% 50%|   Riverside         6:21:39 in  6:23:10 out  LRV
BLAN  36%   |   ....       36% 39% 45%|      reads "X INSTRUCTION CAR" in back
BU.E  40%   |              40% 40% 45%|   Brigham Circle    6:24:51 in               LRV
BU.C  42%   |              42% 42% 42%|
========================================
     43%    AVERAGE LINK 44% 50% 58%
  GAIN IN RIDERS :
...Link Improvements only  2% 16% 35%
...Link & Dwell Improvements
                          10% 26% 46%
```

```
 B O S T O N  C O L L E G E  OUTBOUND #12  SHK  Rider     AVER. TRIP SPEED =  11.5  LOS C
..WEDNESDAY, JANUARY 27, 1982   Typed by:   SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  8:15 P.M.        Checked by: SHK  APR.18, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989==============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  |  WORST
9   STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LIN
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
============================================================================================
PARK STREET  | 16:07-16:50|100% 60% 72%| 43 - 14 = 29  F| --   --   --    --     -- |131  --
BOYLSTON     | 18:49-19:10|100% 60% 72%| 21 - 10 = 11  C|119 - 42 = 77 F= 1500'  8.6 | 88  20
ARLINGTON    | 20:47-21:16|100% 70% 79%| 29 -  9 = 20  F| 97 - 56 = 41  D 2000' 14.1 | 66  26
COPLEY       | 22:15-22:47|100% 40% 58%| 32 - 11 = 21  E| 59 - 44 = 15  B 1600' 18.5 |112  74
AUDITORIUM   | 24:25-24:50|100% 40% 58%| 25 -  9 = 16  E| 98 - 75 = 23  B 2800' 19.5 | 85  22
KENMORE      | 26:28-26:58|100% 65% 76%| 30 -  9 = 21  F| 98 - 51 = 47  E 2250' 15.7 |208  31
BLANDFORD    | 27:55-28:18|100% 65% 76%| 23 -  5 = 18 F=| 57 - 37 = 20  C 1100' 13.2 | 78  14
B.U.EAST     | 29:00-29:00|100% 65% 76%|  0 -  8 = NA   | 42 - 39 =  3  A 1400' 22.7 |180  15
B.U.CENTRAL  | 29:21-29:52|100% 65% 76%| 31 -  8 = 23 F-| 21*- 21 =  0* A  750' 24.4*| 73  17
============================================================================================
* = Best Time |  TOTALS :  --  --  --  234 - 83 =159   |591 -365 =226   13400'   -- |1021 22
   Ever ...   |  AVERAGE: 100% 59% 71%  26 -  9 = 18  E| 74 - 46 = 28  D 1675' 15.5 | 11  27
^ = Worst Time|  MAXIMUM: 100% 70% 79%  43   14   29   |119   75   77    2800' 24.4 |208Worst
   Ever .....|  MINIMUM: 100% 40% 58%   0    5   11   | 21   21    0     750'  8.6 |    Dwel
--------    MEAN DEVIATION:  LOADING  7% LOST DWELLERRsec|LOST LINK 20 sec         24%|Worst
       STANDARD DEVIATION:  LOADING  7% LOST DWELL 5 sec|LOST LINK 24 sec         40%|Link 74
--------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BES
                   Feet      TIME        TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LIN
Leave Door ...      --    <:<<<:<<<      --        --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LIN
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<    |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LIN
Train Arrives      --    8:.16:.07 <<< :<<<     --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LIN
Transit Trip    13,400   8:.29:.21  13 :.14   11.5     |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LIN
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LIN
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LIN
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 3.0  or  => F=  <= 1.5  or  LIN
-------------------------------------------------------- | <<<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES               -------------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      =======================================
   THIS TRIP  THAN LOS .. E / C / B
=====================================   Two stops were skipped : BU East and BU West
PARK     -   |                          |    The trip began by leaving 100 Cambridge St. at
BOYL   25%   |    THE       38% 48% 55% |    7:55 PM, arriving at the platform at 7:59 PM,
ARLI   42%   |    LINK      42% 48% 55% |    At Government Center, other trains heading
COPL   59%   |EFFICIENCIES  59% 59% 59% |    southbound included 8:04 and 8:09 Riverside trai
AUDI   44%   |   WOULD      44% 44% 44% |    LRVs entering Government Center from Park Street
KENM   30%   |    BE        30% 39% 45% |    (Opposite platform) came in at 8:04, 8:05, 8:06,
BLAN   49%   |   ....       49% 49% 58% |    8:07:30 and 8:09:20.
BU.E   71%   |              71% 71% 71% |    The trip ended at Amory Street, 31:40/32:07.
BU.C   76%   |              76% 76% 76% |
=====================================
     44%    AVERAGE LINK 47% 52% 56%
  GAIN IN RIDERS :
...Link Improvements only  7% 18% 27%
...Link & Dwell Improvements
                          12% 26% 41%
 B O S T O N  C O L L E G E   OUTBOUND #13  SHK  Rider     AVER. TRIP SPEED =   9.9  LOS E
...THURSDAY, MARCH 11, 1982     Typed by:   SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  2:20 P.M.        Checked by: SHK  APR.18, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST
9  STATIONS  |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
=============================================================================================
PARK STREET  | 28:23-29:09| 90%  0% 27%| 46 - 14 = 32  F| --    --    --      --    -- |131   --
BOYLSTON     | 30:18-30:44| 80%  0% 24%| 26 - 10 = 16  E| 69 - 42 = 27  D 1500' 14.8 | 88  202
ARLINGTON    | 33:09-33:28| 80%  0% 24%| 19 -  9 = 10  C|145 - 56 = 89 F= 2000'  9.4 | 66  260
COPLEY       | 34:56-35:19| 75%  0% 23%| 23 - 11 = 12  C| 88 - 44 = 44  F 1600' 12.4 |112  740
AUDITORIUM   | 37:10-37:35| 65%  0% 20%| 25 -  9 = 16  E|111 - 75 = 36  C 2800' 17.2 | 85  225
KENMORE      | 39:10-39:32| 30%  0%  9%| 22 -  9 = 13  D| 95 - 51 = 44  E 2250' 16.1 |208  315
BLANDFORD    | 40:38-40:52| 30%  0%  9%| 14 -  5 =  9  E| 66 - 37 = 29  D 1100' 11.4 | 78  147
B.U.EAST     | 41:48-42:05| 30%  0%  9%| 17 -  8 =  9  C| 56 - 39 = 17  C 1400' 17.0 |180  154
B.U.CENTRAL  | 43:43-43:57| 30%  0%  9%| 14 -  8 =  6  B| 98 - 21 = 77 F=  750'  5.2 | 73  178
=============================================================================================
* = Best Time |  TOTALS :   --  --  --  206 - 83 =123  |728 -365 =363   13400'   -- |1021 2221
   Ever ...   |  AVERAGE:  57%  0% 17%   23 -  9 = 14 D| 91 - 46 = 45  E 1675' 12.5 | 11  278
^ = Worst Time|  MAXIMUM:  90%  0% 27%  46   14    32  |145   75   89     2800' 17.2 |208Worst
   Ever .....|  MINIMUM:  30%  0%  9%  14    5     6  | 56   21   17      750'  5.2 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING   8% LOST DWELL 6 sec|LOST LINK 19 sec         24%|Worst
      STANDARD DEVIATION:  LOADING   7% LOST DWELL 7 sec|LOST LINK 23 sec         35%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE  CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH  |  DWELL  .0 - .4 => A  <=  .0 - .2 LINK
Leave Door ...     --    <:<<<:<<<     --       --   |  DWELL  .4 - .8 => B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL  .8 -1.2 => C  <=  .4 - .6 LINK
Train Arrives      --    2:.28:.23 <<< :<<<     --   |  DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK
Transit Trip    13,400   2:.43:.43  15 :.20     9.9  |  DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 3.0  or  => F= <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |        LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ---------------------------------------
```

```
      LINK     SUPPOSE ALL LINK TIMES WERE
   EFFICIENCY  IMPROVED SO NONE WERE WORSE
   THIS TRIP   THAN LOS .. E / C / B
=======================================
PARK    -   |                          |
BOYL   16%  |     THE        16% 18% 21%|
ARLI    9%  |    LINK        13% 16% 18%|
COPL   12%  |EFFICIENCIES    12% 16% 18%|
AUDI   16%  |    WOULD       16% 16% 18%|
KENM   11%  |     BE         11% 13% 15%|
BLAN    5%  |    ....         5%  6%  7%|
BU.E    6%  |                 6%  6%  7%|
BU.C    2%  |                 5%  6%  7%|
=======================================
      9%    AVERAGE LINK 10% 11% 13%
  GAIN IN RIDERS :
...Link Improvements only 11% 22% 44%
...Link & Dwell Improvements
                          18% 35% 57%
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
=======================================

At Government center, LRV-2 in at 2:23:08, out at 24:32, with 90% standees

LRV-2 in at 2:25:55, out at 26:22   25% seated

BUWest in 45:30 out 45:43 other train was one block ahead.

A press report had a Riverside train taking down an overhead line at 2:15 PM.

```
 B O S T O N  C O L L E G E  OUTBOUND #14  SHK  Rider     AVER. TRIP SPEED =  10.6  LOS D
...THURSDAY, MARCH 19, 1982    Typed by:   SHK  FEB.18      Previous Worst =   4.8  LOS F=
 ..Begin Trip  2:00 P.M.       Checked by: SHK  APR.28, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST
9   STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST.  SPEED |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
=============================================================================================
PARK STREET  | 00:51-01:38|100% 50% 65%| 47 - 14 = 33  F| --   --   --     --      -- |131  --
BOYLSTON     | 02:30-02:48|100% 50% 65%| 18 - 10 =  8  C| 52 - 42 = 10  B 1500' 19.7 | 88  202
ARLINGTON    | 04:24-04:55|100% 50% 65%| 31 -  9 = 22 F-| 96 - 56 = 40  D 2000' 14.2 | 66  260
COPLEY       | 05:47-06:20|100% 33% 53%| 33 - 11 = 22  F| 52 - 44 =  8  A 1600' 21.0 |112  740
AUDITORIUM   | 09:40-10:03|100% 33% 53%| 23 -  9 = 14  D|200 - 75 =125 F= 2800'  9.5 | 85  225
KENMORE      | 10:54-11:39|100% 50% 65%| 45 -  9 = 36 F=| 51*- 51 =  0* A 2250' 30.1*|208  315
BLANDFORD    | 12:42-13:12|100% 63% 74%| 30 -  5 = 25 F=| 63 - 37 = 26  D 1100' 11.9 | 78  147
B.U.EAST     | 14:06-14:28|100% 63% 74%| 22 -  8 = 14  E| 54 - 39 = 15  B 1400' 17.7 |180  154
B.U.CENTRAL  | 15:11-15:32|100% 50% 65%| 21 -  8 = 13  E| 43 - 21 = 22  F  750' 11.9 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  270 - 83 =187   |611 -365 =246    13400'   --  |1021 2221
   Ever ...   |  AVERAGE: 100% 49% 64%  30 -  9 = 21   F| 76 - 46 = 31  D 1675' 15.0  | 11  278
^ = Worst Time|  MAXIMUM: 100% 63% 74%  47    14    36   |200    75   125     2800' 30.1  |208Worst
   Ever .....|  MINIMUM: 100% 33% 53%  18     5     8   | 43    21     0      750'  9.5  |   Dwell
~~~~~~~~    MEAN DEVIATION:  LOADING   6% LOST DWELL 9 sec|LOST LINK 26 sec          30% |Worst
       STANDARD DEVIATION:  LOADING   7% LOST DWELL 9 sec|LOST LINK 37 sec          46% |Link 740
---------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH   |  DWELL  .0 - .4 => A  <=  .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<     --       --    |  DWELL  .4 - .8 => B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<   |  DWELL  .8 -1.2 => C  <=  .4 - .6 LINK
Train Arrives     --     2:.00:.51 <<< :<<<     --    |  DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK
Transit Trip    13,400   2:.15:.11  14 :.20    10.6   |  DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<   |  DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<   |  DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<   |  DWELL 3.0   or  => F= <= 1.5   or  LINK
------------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |       LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                ------------------------------------------
```

```
     LINK     SUPPOSE ALL LINK TIMES WERE
  EFFICIENCY IMPROVED SO NONE WERE WORSE
  THIS TRIP   THAN LOS .. E / C / B
=======================================
PARK    -   |                          |
BOYL  53%   |   THE         53% 53% 53%|
ARLI  38%   |   LINK        38% 43% 50%|
COPL  55%   |EFFICIENCIES   55% 55% 55%|
AUDI  20%   |   WOULD       28% 35% 41%|
KENM  53%   |    BE         53% 53% 53%|
BLAN  38%   |   ....        38% 43% 50%|
BU.E  53%   |               53% 53% 53%|
BU.C  36%   |               39% 49% 57%|
=======================================
     38%     AVERAGE LINK 42% 47% 51%
  GAIN IN RIDERS :
...Link Improvements only 11% 24% 34%
...Link & Dwell Improvements
                          17% 33% 48%
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
=======================================

Arrived at Government Center at 1:57:00
Riverside 57:33 in 58:40 out LRV-2
Boston College 59:43 in 00:06 out 50% standees

The short link time between Auditorium and Kenmore of only 51 seconds is notably less that the next fastest time of 70 seconds. The link speeds of 30.1 MPH is much faster than any other link by almost 6 MPH. The dwell time at Kenmore is also higher than other station dwells on this trip. Apparently a recording error was made so that the link time should be about 10-20 seconds longer. The reported results are carried through on all calculation sheets, simply to report all data as recorded, but the evident error should be noted.

```
 B O S T O N  C O L L E G E   OUTBOUND #15  SHK  Rider     AVER. TRIP SPEED =  12.1  LOS C
.... MONDAY, APRIL 12, 1982     Typed by:   SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  8:30 P.M.       Checked by: SHK  APR.29, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9   STATIONS  |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (single)  |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
============================================================================================
PARK STREET   | 44:18-44:58|100% 67% 77%| 40 - 14 = 26  E| --    --   --       --    --|131   --
BOYLSTON      | 45:53-46:05|100% 67% 77%| 12 - 10 =  2  A| 55 - 42 = 13  B 1500' 18.6 | 88  202
ARLINGTON     | 47:18-47:40|100% 70% 79%| 22 -  9 = 13  D| 73 - 56 = 17  B 2000' 18.7 | 66  260
COPLEY        | 48:28-48:57|100% 60% 72%| 29 - 11 = 18  E| 48 - 44 =  4  A 1600' 22.7 |112  740
AUDITORIUM    | 50:18-50:52|100% 35% 55%| 34 -  9 = 25 F-| 81 - 75 =  6  A 2800' 23.6 | 85  225
KENMORE       | 53:26-53:50|100% 15% 41%| 24 -  9 = 15  E|154 - 51 =103 F= 2250' 10.0 |208  315
BLANDFORD     | 54:30-54:50|100% 15% 41%| 20 -  5 = 15 F=| 40 - 37 =  3  A 1100' 18.8 | 78  147
B.U.EAST      | 55:42-56:05|100% 33% 53%| 23 -  8 = 15  E| 52 - 39 = 13  B 1400' 18.4 |180  154
B.U.CENTRAL   | 56:51-57:15|100% 20% 44%| 24 -  8 = 16  F| 46 - 21 = 25  F  750' 11.1 | 73  178|
============================================================================================
* = Best Time  |  TOTALS :  --  --  --  228 - 83 =145  |549 -365 =184    13400'   -- |1021 2221
   Ever ...    |  AVERAGE: 100% 42% 60%  25 -  9 = 16  E| 69 - 46 = 23  C 1675' 16.6 | 11  278|
^ = Worst Time |  MAXIMUM: 100% 70% 79%  40   14   26   |154   75  103     2800' 23.6 |208Worst|
   Ever .....  |  MINIMUM: 100% 15% 41%  12    5    2   | 40   21    3      750' 10.0 |   Dwell|
~~~~~~~~    MEAN DEVIATION:  LOADING 16% LOST DWELL 5 sec|LOST LINK 21 sec        22%|Worst   |
     STANDARD DEVIATION:  LOADING 15% LOST DWELL 7 sec|LOST LINK 31 sec        29%|Link 740|
-------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME        TIME    MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<      --      --  |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --    8:.44:.18 <<< :<<<    --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    8:.56:.51  12 :.33   12.1   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |     LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

    LINK     SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE      ====================================
  THIS TRIP  THAN LOS .. E / C / B
======================================     Left 100 Cambridge St. at 8:30, arrived at
PARK    -  |                          |    Government Center platform at 8:36:30
BOYL  59%  |    THE        59% 59% 59%     Boston College in 42:24    out 42:59
ARLI  59%  |   LINK        59% 59% 59%     Arrived BU West at 58:34, left at 58:50
COPL  72%  |EFFICIENCIES   72% 72% 72%     Arrived at 191 Hamilton Street at 9:16:04
AUDI  67%  |   WOULD       67% 67% 67%     Total door-to-door time of 46 minutes
KENM  18%  |    BE         29% 37% 42%     Straight line distance of 12,500 feet.
BLAN  38%  |   ....        38% 38% 38%     Straight line speed of 4.1 MPH.
BU.E  31%  |               31% 31% 31%     Total trip length of 21,200 ft.  (7.0 MPH)
BU.C  24%  |               28% 35% 41% |
======================================
      40%    AVERAGE LINK 45% 48% 49%
 GAIN IN RIDERS :
...Link Improvements only 13% 20% 23%
...Link & Dwell Improvements
                          14% 25% 35%
```

```
 B O S T O N   C O L L E G E  OUTBOUND #16  SHK  Rider     AVER. TRIP SPEED =   8.6  LOS F
....TUESDAY, APRIL 13, 1982     Typed by:   SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:50 P.M.        Checked by: SHK  APR.30, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  |  WORST |
9   STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT|SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
==============================================================================================
PARK STREET | 55:26-56:15|100%  2% 32%| 49 - 14 = 35 F-| --   --   --     --     -- |131  -- |
BOYLSTON    | 57:18-57:40|100%  4% 33%| 22 - 10 = 12  D| 63 - 42 = 21  C 1500' 16.2 | 88  202|
ARLINGTON   | 59:24-59:49|100%  5% 34%| 25 -  9 = 16  E|104 - 56 = 48  E 2000' 13.1 | 66  260|
COPLEY     5:01:03-01:27|100%  3% 32%| 24 - 11 = 13  C| 74 - 44 = 30  D 1600' 14.7 |112  740|
AUDITORIUM  | 03:21-03:40|100%  2% 32%| 19 -  9 = 10  C|114 - 75 = 39  C 2800' 16.7 | 85  225|
KENMORE     | 08:14-08:40| 95%  0% 29%| 26 -  9 = 17  E|274 - 51 =223 F= 2250'  5.6 |208  315|
BLANDFORD   | 09:27-10:41|100%  0% 30%| 74 -  5 = 69 F=| 47 - 37 = 10  B 1100' 16.0 | 78  147|
B.U.EAST    | 12:14-12:35|100%  2% 32%| 21 -  8 = 13  E| 93 - 39 = 54 F- 1400' 10.3 |180  154|
B.U.CENTRAL | 13:09-13:32|100%  1% 31%| 23 -  8 = 15  E| 34 - 21 = 13  D  750' 15.0 | 73  178|
==============================================================================================
* = Best Time |  TOTALS :  --   --   --  283 - 83 =200  |803 -365 =438   13400'    -- |1021 2221
    Ever ...  |  AVERAGE:  99%  2% 32%  31 -  9 = 22 F-|100 - 46 = 55  F 1675' 11.4 | 11  278|
^ = Worst Time|  MAXIMUM: 100%  5% 34%  74   14    69   |274   75  223    2800' 16.7 |208Worst|
    Ever .....|  MINIMUM:  95%  0% 29%  19    5    10   | 34   21   10     750'  5.6 |   Dwell|
---------   MEAN DEVIATION:  LOADING  1% LOST DWELL15 sec|LOST LINK 42 sec        29%|Worst   |
        STANDARD DEVIATION:  LOADING  1% LOST DWELL18 sec|LOST LINK 65 sec        39%|Link 740|
--------------------------------------------------------------------------------------------- |
               DISTANCE   CLOCK     ELAPSED  SPEED |  LOST TIME/BEST TIME   LOS LOST TIME/BEST|
                 Feet      TIME       TIME    MPH  |    DWELL  .0 - .4 => A  <=  .0 - .2 LINK|
Leave Door ...    --    <:<<<:<<<      --      --  |    DWELL  .4 - .8 => B  <=  .2 - .4 LINK|
Arrive Platform  2,500  <:<<<:<<< <<< :<<<  <<<<<  |    DWELL  .8 -1.2 => C  <=  .4 - .6 LINK|
Train Arrives     --    4:.55:.26 <<< :<<<    --   |    DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK|
Transit Trip    13,400  5:.13:.09  17 :.43    8.6  |    DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK|
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<  <<<<<  |    DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK|
Total Trip ...  19,700  <:<<<:<<< <<< :<<<  <<<<<  |    DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK|
Straight Line   12,500  <:<<<:<<< <<< :<<<  <<<<<  |    DWELL 3.0  or  => F= <= 1.5  or  LINK|
---------------------------------------------------| <<<<<<<<<<<<> more              more     |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge   |     LEVEL OF SERVICE CRITERIA            |
LRV CAPACITY :  50 SEATS + 116 STANDEES   ----------------------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE     ========================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================    Arrived at North Station Platform at 4:49
PARK    -   |                         |    North Station   4:50:28 out  25% seats full
BOYL  21%   |    THE      21% 21% 25% |    Haymarket  51:41 in   52:01 out  50% seats full
ARLI  18%   |   LINK      18% 22% 25% |    Government Ctr. 53:19 in 53:39 out 100% seats full
COPL  20%   |EFFICIENCIES 20% 23% 26% |    BU West stop was skipped.
AUDI  21%   |   WOULD     21% 21% 25% |    Amory Street  15:30 in  15:55 out
KENM   6%   |    BE       17% 21% 25% |    LRV-2 followed, arriving at Amory at 17:09
BLAN  23%   |   ....      23% 23% 23% |
BU.E  13%   |             16% 20% 23% |
BU.C  20%   |             20% 21% 25% |
=======================================
      15%    AVERAGE LINK 19% 22% 25%
  GAIN IN RIDERS :
...Link Improvements only 27% 47% 67%
...Link & Dwell Improvements
                          39% 56% 83%
 B O S T O N   C O L L E G E   OUTBOUND #17  SHK  Rider      AVER. TRIP SPEED =   5.7  LOS F=
..WEDNESDAY, APRIL 14, 1982     Typed by:    SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:25 P.M.        Checked by:  SHK  APR.30, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders| DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9  STATIONS  |    TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS    MPH   |DWELL   |
============================================================================================
PARK STREET  | 26:02-27:36|100% 95% 97%| 94 - 14 = 80 F=| --   --   --     --     -- |131  -- 
BOYLSTON     | 28:30-28:55|100% 95% 97%| 25 - 10 = 15  D| 54 - 42 = 12  B 1500' 18.9 | 88  202
ARLINGTON    | 30:13-30:55|100% 98% 99%| 42 -  9 = 33 F=| 78 - 56 = 22  B 2000' 17.5 | 66  260
COPLEY       | 31:43-33:35|100%100%100%|112^- 11 =101^F=| 48 - 44 =  4  A 1600' 22.7 |112  740
AUDITORIUM   | 35:05-36:30|100%100%100%| 85^-  9 = 76^F=| 90 - 75 = 15  B 2800' 21.2 | 85  225
KENMORE      | 38:03-48:58|100%100%100%|655~-  9 =646~F=| 93 - 51 = 42  E 2250' 16.5 |208  315
BLANDFORD    | 50:05-50:45|100%100%100%| 40 -  5 = 35 F=| 67 - 37 = 30  E 1100' 11.2 | 78  147
B.U.EAST     | 51:40-52:14|100%100%100%| 34 -  8 = 26 F=| 55 - 39 = 16  C 1400' 17.4 |180  154
B.U.CENTRAL  | 52:45-53:10|100%100%100%| 25 -  8 = 17  F| 31 - 21 = 10  C  750' 16.5 | 73  178|
============================================================================================
* = Best Time |  TOTALS :  --  --  -- 1112 - 83 =1029 |516 -365 =151   13400'    -- |1021 2221
   Ever ...   |  AVERAGE: 100% 99% 99% 124 -  9 =114 F=| 65 - 46 = 19  C 1675' 17.7 | 11  278|
^ = Worst Time|  MAXIMUM: 100%100%100% 655   14  646   | 93   75   42     2800' 22.7 |208Worst|
   Ever ..... |  MINIMUM: 100% 95% 97%  25    5   15   | 31   21    4      750' 11.2 |   Dwell|
--------   MEAN DEVIATION:  LOADING  1% LOST DWELL133sec|LOST LINK  9 sec          12%|Worst   |
       STANDARD DEVIATION:  LOADING  1% LOST DWELL190sec|LOST LINK 11 sec          19%|Link 740|
-------------------------------------------------------------------------------------------
                  DISTANCE  CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST|
                    Feet     TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK|
Leave Door ...      --    <:<<<:<<<      --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK|
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK|
Train Arrives       --    5:.26:.02 <<< :<<<     --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK|
Transit Trip    13,400    5:.52:.45  26 :.43    5.7   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK|
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK|
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 =>  F- <= 1.2 -1.5 LINK|
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  =>  F= <= 1.5  or  LINK|
------------------------------------------------------|<<<<<<<<<<<> more              more     |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES               ------------------------------------------
```

```
     LINK    SUPPOSE ALL LINK TIMES WERE
  EFFICIENCY IMPROVED SO NONE WERE WORSE
  THIS TRIP  THAN LOS .. E / C / B
========================================
PARK    -   |                           |
BOYL  75%   |    THE       75% 75% 75%  |
ARLI  70%   |    LINK      70% 70% 70%  |
COPL  91%   | EFFICIENCIES 91% 91% 91%  |
AUDI  83%   |    WOULD     83% 83% 83%  |
KENM  55%   |     BE       55% 67% 77%  |
BLAN  55%   |    ....      55% 67% 77%  |
BU.E  71%   |              71% 71% 77%  |
BU.C  68%   |              68% 68% 77%  |
========================================
      70%    AVERAGE LINK  70% 74% 78%
  GAIN IN RIDERS :
...Link Improvements only   0%  6% 11%
...Link & Dwell Improvements
                           NA  NA  NA
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
======================================

Left Government Center at 5:24:10 with 8 standees
Arrived BU West at 55:40 out at 56:26.

..MAJOR TRAIN BREAKDOWN..

Announcement at Kenmore that train was being withdrawn from service because of a bad wheel. Entire train was unloaded. Another LRV arrived about 5:45 and left fully loaded at 5:46:28. A dual LRV arrived at 47:47, loaded up and left at 48:58. Total waiting time at Kenmore station was 10 minutes and 55 seconds for the second LRV.

```
 B O S T O N  C O L L E G E  OUTBOUND #18  SHK  Rider     AVER. TRIP SPEED =  12.2  LOS C
.... MONDAY, MAY 24, 1982      Typed by:   SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:20 P.M.      Checked by: SHK  APR.30, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|   TIME    |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
=============================================================================================
PARK STREET  | 23:40-24:20|100% 50% 65%| 40 - 14 = 26  E| --    --    --      --    -- |131  --
BOYLSTON     | 25:28-25:47|100% 70% 79%| 19 - 10 =  9  C| 68 - 42 = 26  D 1500' 15.0 | 88  202
ARLINGTON    | 27:18-27:45|100% 80% 86%| 27 -  9 = 18  F| 91 - 56 = 35  D 2000' 15.0 | 66  260
COPLEY       | 28:44-29:12|100% 85% 90%| 28 - 11 = 17  D| 59 - 44 = 15  B 1600' 18.5 |112  740
AUDITORIUM   | 30:59-31:22|100% 90% 93%| 23 -  9 = 14  D|107 - 75 = 32  C 2800' 17.8 | 85  225
KENMORE      | 32:44-33:09|100% 95% 97%| 25 -  9 = 16  E| 82 - 51 = 31  D 2250' 18.7 | 61  315
BLANDFORD    | 33:51-34:09|100% 95% 97%| 18 -  5 = 13 F-| 42 - 37 =  5  A 1100' 17.9 | 78  147
B.U.EAST     | 35:05-35:25|100% 90% 93%| 20 -  8 = 12  D| 56 - 39 = 17  C 1400' 17.0 |180  154
B.U.CENTRAL  | 36:10-36:29|100% 90% 93%| 19 -  8 = 11  D| 45 - 21 = 24  F  750' 11.4 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  219 - 83 =136   |550 -365 =185   13400'   -- |1021 2221
   Ever ...   |  AVERAGE: 100% 83% 88%  24 -  9 = 15  E | 69 - 46 = 23  C 1675' 16.6 | 11  278
^ = Worst Time|  MAXIMUM: 100% 95% 97%  40   14   26    |107   75   35     2800' 18.7 |180Worst
   Ever .....|  MINIMUM: 100% 50% 65%  18    5    9    | 42   21    5      750' 11.4 |   Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING  9% LOST DWELL 4 sec|LOST LINK  8 sec         10% |Worst
     STANDARD DEVIATION:  LOADING 10% LOST DWELL 5 sec|LOST LINK 10 sec         15% |Link 740
---------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet      TIME        TIME    MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<      --      --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500     <:<<<:<<< <<< :<<<  <<<<<    |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     5:.23:.40 <<< :<<<   --      |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400     5:.36:.10  12 :.30   12.2    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800     <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700     <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500     <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 3.0   or  => F=  <= 1.5   or LINK
--------------------------------------------------------|<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ---------------------------------------

       LINK     SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
    EFFICIENCY IMPROVED SO NONE WERE WORSE       ======================================
    THIS TRIP   THAN LOS .. E / C / B
========================================      Arrived at Science Park Station, 5:06 PM
PARK     -   |                            |      5:09:43 Riverside in LRV-2 5:11:20 thru "X no Pas
BOYL  40%    |    THE          40% 43% 50%|      Riverside  16:05 in  16:22 out  24% seated LRV-2
ARLI  49%    |    LINK         49% 53% 61%|      North Station  17:29 in  17:41 out
COPL  64%    |EFFICIENCIES 64% 64% 64%    |      Haymarket  18:41 in 19:05 out change trains
AUDI  63%    |    WOULD        63% 63% 69%|      Boston College @ Haymarket  19:52 in 20:17 out
KENM  58%    |     BE          58% 62% 72%|                50% seated
BLAN  85%    |    ....         85% 85% 85%|      @ Government Center 21:23 in 21:47 out 5 standees
BU.E  68%    |                 68% 68% 75%|      @ BU West  38:23 in  38:39 out
BU.C  43%    |                 49% 62% 72%|
========================================      At Science Park, signal stayed red for 40 seconds
     58%    AVERAGE LINK 59% 62% 68%                   a train passed.
  GAIN IN RIDERS :
...Link Improvements only  2%  7% 17%
...Link & Dwell Improvements
                           5% 13% 29%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #19  SHK  Rider    AVER. TRIP SPEED =  10.4  LOS D
.... MONDAY, JUNE 7, 1982        Typed by:   SHK  FEB.18, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:20 P.M.         Checked by: SHK  APR.30, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST  |
9   STATIONS|   TIME     |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED|    LINK|
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=============================================================================================|
PARK STREET | 23:05-23:48|100% 15% 41%| 43 - 14 = 29  F| --   --   --     --     -- |131  -- |
BOYLSTON    | 24:58-25:15|100% 20% 44%| 17 - 10 =  7  B| 70 - 42 = 28  D 1500' 14.6 | 88  202|
ARLINGTON   | 27:02-27:22|100% 25% 48%| 20 -  9 = 11  D|107 - 56 = 51  E 2000' 12.7 | 66  260|
COPLEY      | 28:24-29:02|100% 15% 41%| 38 - 11 = 27 F-| 62 - 44 = 18  C 1600' 17.6 |112  740|
AUDITORIUM  | 30:51-31:16|100%  0% 30%| 25 -  9 = 16  E|109 - 75 = 34  C 2800' 17.5 | 85  225|
KENMORE     | 33:50-34:06| 85%  0% 26%| 16 -  9 =  7  B|154 - 51 =103 F= 2250' 10.0 |208  315|
BLANDFORD   | 34:48-35:59| 85%  0% 26%| 71 -  5 = 66 F=| 42 - 37 =  5  A 1100' 17.9 | 78  147|
B.U.EAST    | 36:52-37:04| 50%  0% 15%| 12 -  8 =  4  B| 53 - 39 = 14  B 1400' 18.0 |180  154|
B.U.CENTRAL | 37:40-37:55| 50%  0% 15%| 15 -  8 =  7  C| 36 - 21 = 15  D  750' 14.2 | 73  178|
==============================================================================================
* = Best Time | TOTALS :  --   --   --  257 - 83 =174  |633 -365 =268    13400'   -- |1021 2221
   Ever ...   | AVERAGE:  86%  8% 32%   29 -  9 = 19  F| 79 - 46 = 34  D 1675' 14.4 | 11  278|
^ = Worst Time| MAXIMUM: 100% 25% 48%   71   14    66  |154   75  103    2800' 18.0 |208Worst|
   Ever .....| MINIMUM:  50%  0% 15%   12    5     4  | 36   21    5     750' 10.0 |   Dwell|
~~~~~~~~  MEAN DEVIATION:  LOADING 12% LOST DWELL16 sec|LOST LINK 22 sec          15% |Worst   |
     STANDARD DEVIATION:  LOADING 12% LOST DWELL19 sec|LOST LINK 29 sec          22% |Link 740|
---------------------------------------------------------------------------------------------|
                  DISTANCE   CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet     TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<     --       --  |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform   2,500    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     4:.23:.05 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400    4:.37:.40  14 :.35   10.4  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------| <<<<<<<<<<<> more            more     |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |     LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES               ----------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      =======================================
   THIS TRIP   THAN LOS .. E / C / B
=======================================       Government Center : 19:31 in 20:08 out  80% seated
PARK    -    |                          |     BU West   38:55 in   39:05 out  45% seated
BOYL  25%    |    THE       25% 27% 32% |
ARLI  23%    |    LINK      23% 29% 34% |
COPL  34%    |EFFICIENCIES  34% 34% 37% |
AUDI  28%    |   WOULD      28% 28% 32% |
KENM  10%    |    BE        16% 20% 23% |
BLAN  23%    |   ....       23% 23% 23% |
BU.E  19%    |              19% 19% 19% |
BU.C   9%    |               9% 10% 12% |
=======================================
     18%     AVERAGE LINK 20% 22% 25%
  GAIN IN RIDERS :
...Link Improvements only 11% 22% 39%
...Link & Dwell Improvements
                          21% 34% 49%
```

```
 B O S T O N  C O L L E G E  OUTBOUND #20  SHK  Rider    AVER. TRIP SPEED =   8.9  LOS F
....TUESDAY, OCTOBER 26, 1982  Typed by:   SHK  FEB.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:30 P.M.       Checked by: SHK  APR.30, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"    | WORST
9   STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST.  SPEED |    LINK
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
=============================================================================================
PARK STREET  | 41:34-42:29|100% 95% 97%| 55 - 14 = 41 F-| --    --    --     --     -- |131   --
BOYLSTON     | 43:42-44:06|100% 90% 93%| 24 - 10 = 14  D| 73 - 42 = 31  D 1500' 14.0 | 88  202
ARLINGTON    | 46:13-46:58|100% 95% 97%| 45 -  9 = 36 F=|127 - 56 = 71 F- 2000' 10.7 | 66  260
COPLEY       | 48:25-49:05|100% 93% 95%| 40 - 11 = 29 F-| 87 - 44 = 43  E 1600' 12.5 |112  740
AUDITORIUM   | 51:19-52:05|100% 90% 93%| 46 -  9 = 37 F=|134 - 75 = 59  D 2800' 14.2 | 85  225
KENMORE      | 53:55-54:32|100% 92% 94%| 37 -  9 = 28 F=|110 - 51 = 59  F 2250' 13.9 |208  315
BLANDFORD    | 55:32-56:34|100% 92% 94%| 62 -  5 = 57 F=| 60 - 37 = 23  D 1100' 12.5 | 78  147
B.U.EAST     | 57:30-57:30|100% 90% 93%|  0 -  8 = NA   | 56 - 39 = 17  C 1400' 17.0 |180  154
B.U.CENTRAL  | 58:32-59:05|100% 90% 93%| 33 -  8 = 25 F=| 62 - 21 = 41 F=  750'  8.2 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  342 - 83 =267  |709 -365 =344   13400'    -- |1021 2221
    Ever ...  |  AVERAGE: 100% 92% 94%  38 -  9 = 30 F=| 89 - 46 = 43  E 1675' 12.9 | 11  278
^ = Worst Time|  MAXIMUM: 100% 95% 97%  62   14   57    |134   75   71     2800' 17.0 |208Worst
    Ever .....|  MINIMUM: 100% 90% 93%   0    5   14    | 56   21   17      750'  8.2 |   Dwell
--------    MEAN DEVIATION:  LOADING  1% LOST DWELL   sec|LOST LINK 15 sec         13%|Worst
       STANDARD DEVIATION:  LOADING  2% LOST DWELL 12sec|LOST LINK 18 sec         22%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE  CLOCK     ELAPSED  SPEED |LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet     TIME       TIME    MPH  |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --    <:<<<:<<<     --      --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --    5:.41:.34 <<< :<<<    --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   5:.58:.32  16 :.58    8.9  |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 3.0   or => F=  <= 1.5   or LINK
----------------------------------------------------|<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge    |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ------------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE      ========================================
  THIS TRIP  THAN LOS .. E / C / B
=======================================    The train did not stop at BU East.
PARK    -  |                          |    Government Ctr. 38:20 in 39:01 out
BOYL  56%  |    THE       56% 65% 75% |    BU West  6:00:50 in  01:32 out
ARLI  41%  |    LINK      49% 62% 72% |    Next train followed closely at BU West
COPL  49%  |EFFICIENCIES  49% 65% 75% |      01:25 in  01:40 out  90% seats full no standees
AUDI  53%  |   WOULD      53% 63% 73% |
KENM  43%  |    BE        49% 62% 72% |
BLAN  58%  |   ....       58% 63% 72% |
BU.E  65%  |              65% 65% 72% |
BU.C  32%  |              49% 62% 72% |
=======================================
      48%    AVERAGE LINK 53% 63% 72%
  GAIN IN RIDERS :
...Link Improvements only 10% 31% 50%
...Link & Dwell Improvements
                          26% 52% 78%
 B O S T O N   C O L L E G E   OUTBOUND #21  SHK  Rider     AVER. TRIP SPEED =  13.0  LOS C
.... FRIDAY, OCTOBER 29, 1982   Typed by:    SHK  FEB.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  3:10 P.M.       Checked by: SHK  APR.30, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L|  STATION-STATION or "LINK"   |  WORST |
9   STATIONS|    TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |     LINK|
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL    |
=========================================================================================|
PARK STREET | 09:52-10:20|100%  3% 32%| 28 - 14 = 14  C| --    --    --     --    --  |131  -- |
BOYLSTON    | 11:13-11:26|100%  5% 34%| 13 - 10 =  3  A| 53 - 42 = 11  B 1500' 19.3  | 88  202|
ARLINGTON   | 13:14-13:35|100%  8% 36%| 21 -  9 = 12  D|108 - 56 = 52  E 2000' 12.6  | 66  260|
COPLEY      | 14:38-14:57|100%  5% 34%| 19 - 11 =  8  B| 63 - 44 = 19  C 1600' 17.3  |112  740|
AUDITORIUM  | 16:32-16:49|100%  5% 34%| 17 -  9 =  8  C| 95 - 75 = 20  B 2800' 20.1  | 85  225|
KENMORE     | 18:12-18:28|100%  7% 35%| 16 -  9 =  7  B| 83 - 51 = 32  D 2250' 18.5  |208  315|
BLANDFORD   | 19:10-19:23|100%  7% 35%| 13 -  5 =  8  E| 42 - 37 =  5  A 1100' 17.9  | 78  147|
B.U.EAST    | 20:06-20:26|100%  5% 34%| 20 -  8 = 12  D| 43 - 39 =  4  A 1400' 22.2  |180  154|
B.U.CENTRAL | 21:28-21:43|100%  0% 30%| 15 -  8 =  7  C| 62 - 21 = 41 F=  750'  8.2  | 73  178|
==========================================================================================
* = Best Time |  TOTALS :  --   --   --  162 - 83 = 79   |549 -365 =184    13400'   --  |1021 2221
    Ever ...  |  AVERAGE: 100%  5% 34%  18 -  9 =  9  C | 69 - 46 = 23  C 1675' 16.6  | 11  278|
^ = Worst Time|  MAXIMUM: 100%  8% 36%  28    14    14   |108   75   52     2800' 22.2  |208Worst
    Ever .....|  MINIMUM: 100%  0% 30%  13     5     3   | 42   21    4      750'  8.2  |   Dwell
--------   MEAN DEVIATION:  LOADING  1% LOST DWELL  3sec|LOST LINK 14 sec          19%|Worst
       STANDARD DEVIATION:  LOADING  2% LOST DWELL  3sec|LOST LINK 16 sec          29%|Link 740
-----------------------------------------------------------------------------------------|
                   DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                     Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...       --    <:<<<:<<<      --       --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform   2,500    <:<<<:<<< <<< :<<<   <<<<<    |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     3:.09:.52 <<< :<<<     --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400    3:.21:.28  11 :.36    13.0    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800    <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700    <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500    <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
---------------------------------------------------------| <<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge          |      LEVEL OF SERVICE CRITERIA       |
LRV CAPACITY :  50 SEATS + 116 STANDEES                    -----------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE      =========================================
   THIS TRIP  THAN LOS .. E / C / B
========================================
PARK    -  |                            |
BOYL  25%  |    THE       25% 25% 25%   |
ARLI  18%  |    LINK      18% 23% 26%   |
COPL  25%  | EFFICIENCIES 25% 25% 28%   |
AUDI  27%  |   WOULD      27% 27% 27%   |
KENM  21%  |    BE        21% 23% 26%   |
BLAN  31%  |   ....       31% 31% 31%   |
BU.E  32%  |              32% 32% 32%   |
BU.C  12%  |              18% 23% 26%   |
========================================
     23%    AVERAGE LINK 24% 25% 27%
  GAIN IN RIDERS :
...Link Improvements only  4%  9% 17%
...Link & Dwell Improvements
                            7% 15% 24%
 B O S T O N   C O L L E G E   OUTBOUND #22  SHK  Rider     AVER. TRIP SPEED =   6.1  LOS F=
.... MONDAY, JANUARY 17, 1983   Typed by:    SHK  FEB.20, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:40 P.M.       Checked by: SHK  MAY 1, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME     |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (one) BV|  IN    OUT  |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
=============================================================================================
PARK STREET  | 46:30-48:41|100%100%100%|131^- 14 =117^F=| --   --   --     --     -- |131  --
BOYLSTON     | 50:10-51:38|100%100%100%| 88^- 10 = 78^F=| 89 - 42 = 47  F 1500' 11.5 | 88  202
ARLINGTON    | 52:34-53:40|100% 99% 99%| 66^-  9 = 57^F=| 56*- 56 =  0* A 2000' 24.4*| 66  260
COPLEY       | 54:58-56:03|100% 99% 99%| 65 - 11 = 54 F=| 78 - 44 = 34  D 1600' 14.0 |112  740
AUDITORIUM   | 57:48-58:51|100% 99% 99%| 63 -  9 = 54 F=|105 - 75 = 30  C 2800' 18.2 | 85  225
KENMORE     6:04:06-05:06|100% 98% 99%| 60 -  9 = 51 F=|315^- 51 =264^F= 2250'  4.9^|208  315
BLANDFORD    | 06:06-07:15|100% 99% 99%| 69 -  5 = 64 F=| 60 - 37 = 23  D 1100' 12.5 | 78  147
B.U.EAST     | 08:05-10:28|100% 98% 99%|143 -  8 =135 F=| 50 - 39 = 11  B 1400' 19.1 |180  154
B.U.CENTRAL  | 11:03-12:16|100% 98% 99%| 73^-  8 = 65^F=| 35 - 21 = 14  D  750' 14.6 | 73  178
=============================================================================================
* = Best Time  |  TOTALS :  --  --  --  758 - 83 =675  |788 -365 =423   13400'   --  |1021 2221
    Ever ...   |  AVERAGE: 100% 99% 99%  84 -  9 = 75 F=| 99 - 46 = 53  F 1675' 11.6  | 11  278|
^ = Worst Time|  MAXIMUM: 100%100%100% 143    14   135  |315   75  264    2800' 24.4  |208Worst
    Ever .....|  MINIMUM: 100% 98% 99%  60     5    51  | 35   21    0     750'  4.9  |   Dwell
~~~~~~~~~   MEAN DEVIATION:   LOADING   0% LOST DWELL 26sec|LOST LINK 53 sec          38%|Worst
       STANDARD DEVIATION:   LOADING   0% LOST DWELL 29sec|LOST LINK 81 sec          59%|Link 740
---------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet      TIME      TIME    MPH    |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --      --     |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     5:.46:.30 <<< :<<<    --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    6:.11:.03  24 :.33    6.1    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              -----------------------------------------

     LINK     SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ======================================
   THIS TRIP  THAN LOS .. E / C / B
========================================    Arrived at Haymarket Platform : 4:58:50
PARK    -   |                            |   Waiting LRV had locked brakes.
BOYL  47%   |    THE        53% 67% 77%  |   Everybody off disabled train 5:08
ARLI  100%  |   LINK        <<< <<< <<<  |   Train towed out at 5:22:00
COPL  56%   |EFFICIENCIES  56% 66% 76%  |   Heath St. Express through 22:40
AUDI  71%   |   WOULD       71% 71% 71%  |   Heath St. PCC-2  23:30 in  24:34 out
KENM  16%   |    BE         52% 66% 76%  |   Boston College express through 25:00
BLAN  61%   |   ....        61% 66% 76%  |   Boston College  26:10 in 27:05 out full
BU.E  77%   |               77% 77% 77%  |   Heath St. PCC-2 28:14 in 28:48 out full
BU.C  59%   |               59% 66% 76%  |   Boston College @ Harmarket 41:15 in  41:42 out
========================================            100% seats, 5% standees
     46%    AVERAGE LINK 64% 72% 78%        @ Government Center 43:30 in 44:33 out 99% standee
  GAIN IN RIDERS :                            @ BU West  13:12 in  14:12 out  97% standees
...Link Improvements only 39% 57% 70%
...Link & Dwell Improvements
                            99% <<< <<<
```

```
 B O S T O N   C O L L E G E   OUTBOUND #23  SHK  Rider     AVER. TRIP SPEED =  12.0  LOS C
.... FRIDAY, APRIL 29, 1983     Typed by:   SHK  FEB.20, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  8:25 P.M.       Checked by: SHK  MAY 4, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9   STATIONS  |    TIME  · |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |   LINK |
LRV (one) BV  |  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL   |
=============================================================================================
PARK STREET   | 25:50-26:26|100% 40% 58%| 36 - 14 = 22  D| --   --   --     --     --  |131  -- 
BOYLSTON      | 27:28-27:42|100% 40% 58%| 14 - 10 =  4  B| 62 - 42 = 20  C 1500' 16.5 | 88  202
ARLINGTON     | 29:17-29:34|100% 33% 53%| 17 -  9 =  8  C| 95 - 56 = 39  D 2000' 14.4 | 66  260
COPLEY        | 30:47-31:10|100% 40% 58%| 23 - 11 = 12  C| 73 - 44 = 29  D 1600' 14.9 |112  740
AUDITORIUM    | 32:45-33:13|100% 60% 72%| 28 -  9 = 19  F| 95 - 75 = 20  B 2800' 20.1 | 85  225
KENMORE       | 34:32-35:00|100% 65% 76%| 28 -  9 = 19  F| 79 - 51 = 28  C 2250' 19.4 |208  315
BLANDFORD     | 35:41-36:10|100% 70% 79%| 29 -  5 = 24 F=| 41 - 37 =  4  A 1100' 18.3 | 78  147
B.U.EAST      | 37:16-37:52|100% 75% 83%| 36 -  8 = 28 F=| 66 - 39 = 27  D 1400' 14.5 |180  154
B.U.CENTRAL   | 38:24-39:06|100% 75% 83%| 42 -  8 = 34 F=| 32 - 21 = 11  C  750' 16.0 | 73  178
==============================================================================================
* = Best Time |  TOTALS :  --  --  --  253 - 83 =170   |543 -365 =178   13400'   --  |1021 2221
    Ever ...  |  AVERAGE: 100% 55% 69%  28 -  9 = 19  F| 68 - 46 = 22  C 1675' 16.8 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 75% 83%  42   14   34   | 95   75   39    2800' 20.1 |208Worst|
    Ever .....|  MINIMUM: 100% 33% 53%  14    5    4   | 32   21    4     750' 14.4 |   Dwell|
---------   MEAN DEVIATION:  LOADING 12% LOST DWELL  8sec|LOST LINK  9 sec         10% |Worst   |
       STANDARD DEVIATION:  LOADING 11% LOST DWELL  9sec|LOST LINK 10 sec         13% |Link 740|
---------------------------------------------------------------------------------------------
                DISTANCE  CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                  Feet     TIME      TIME     MPH  |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --    <:<<<:<<<     --      --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --    8:.25:.50 <<< :<<<    --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400   8:.38:.24  12 :.34   12.0  |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ... 3,800   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ... 19,700   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line  12,500   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
---------------------------------------------------|<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge   |     LEVEL OF SERVICE CRITERIA       |
LRV CAPACITY :  50 SEATS + 116 STANDEES             -------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE     ======================================
  THIS TRIP  THAN LOS .. E / C / B
====================================      Arrive at Government Center Platform 8:17:00
PARK     -  |                          |     Riverside 17:54 in  18:54 out
BOYL   39%  |    THE       39% 39% 45% |     Cleveland Circle  19:10 in  22:54 out
ARLI   34%  |   LINK       34% 39% 45% |     Boston College  23:38 in  24:15 out  9% standees
COPL   32%  |EFFICIENCIES  32% 35% 41% |
AUDI   46%  |   WOULD      46% 46% 46% |     BU West stop bypassed at 40:00
KENM   46%  |    BE        46% 46% 55% |     Amory Street  40:40 in  41:15 out
BLAN   69%  |   ....       69% 69% 69% |
BU.E   47%  |              47% 53% 61% |
BU.C   54%  |              54% 54% 64% |
====================================
      46%    AVERAGE LINK  46% 49% 54%
  GAIN IN RIDERS :
...Link Improvements only   0%  7% 17%
...Link & Dwell Improvements
                           10% 18% 34%
 B O S T O N   C O L L E G E   OUTBOUND #24  SHK  Rider     AVER. TRIP SPEED =  12.7  LOS C
.... FRIDAY, JUNE 3, 1983        Typed by:   SHK  FEB.20, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:10 P.M.        Checked by: SHK  MAY 4, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK
LRV (one) BV|  IN     OUT|SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
==============================================================================================
PARK STREET | 12:14-13:01|100% 50% 65%| 47 - 14 = 33  F|  --    --    --     --    -- |131  --
BOYLSTON    | 13:50-14:10|100% 70% 79%| 20 - 10 = 10  C| 49 - 42 =  7  A 1500' 20.9 | 88  202
ARLINGTON   | 15:43-16:12|100% 40% 58%| 29 -  9 = 20  F| 93 - 56 = 37  D 2000' 14.7 | 66  260
COPLEY      | 17:01-17:25|100% 45% 62%| 24 - 11 = 13  C| 49 - 44 =  5  A 1600' 22.3 |112  740
AUDITORIUM  | 18:50-19:12|100% 35% 55%| 22 -  9 = 13  D| 85 - 75 = 10  A 2800' 22.5 | 85  225
KENMORE     | 21:02-21:34|100%  3% 32%| 32 -  9 = 23 F-|110 - 51 = 59  F 2250' 13.9 |208  315
BLANDFORD   | 22:13-22:35|100%  3% 32%| 22 -  5 = 17 F=| 39 - 37 =  2  A 1100' 19.2 | 78  147
B.U.EAST    | 23:15-23:35|100%  0% 30%| 20 -  8 = 12  D| 40 - 39 =  1  A 1400' 23.9 |180  154
B.U.CENTRAL | 24:09-24:24|100%  0% 30%| 15 -  8 =  7  C| 34 - 21 = 13  D  750' 15.0 | 73  178
==============================================================================================
* = Best Time |  TOTALS :  --  --  --   231 - 83 =148   |499 -365 =134   13400'    -- |1021 2221
    Ever ...  |  AVERAGE: 100% 27% 49%   26 -  9 = 16  E| 62 - 46 = 17  B 1675' 18.3 | 11  278
^ = Worst Time|  MAXIMUM: 100% 70% 79%   47   14   33   |110   75   59    2800' 23.9 |208Worst
    Ever .....|  MINIMUM: 100%  0% 30%   15    5    7   | 34   21    1     750' 13.9 |   Dwell
~~~~~~~~~   MEAN DEVIATION:  LOADING 18% LOST DWELL  7sec|LOST LINK 16 sec        17% |Worst
        STANDARD DEVIATION:  LOADING 17% LOST DWELL  7sec|LOST LINK 19 sec        24% |Link 740
----------------------------------------------------------------------------------------------
                 DISTANCE  CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet     TIME      TIME     MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --    <:<<<:<<<     --       --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --    4:.12:.14 <<< :<<<     --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   4:.24:.09  11 :.55    12.7  |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 3.0   or => F=  <= 1.5  or  LINK
-----------------------------------------------------|<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |       LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              -----------------------------------------

     LINK     SUPPOSE ALL LINK TIMES WERE       TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE       ========================================
   THIS TRIP  THAN LOS .. E / C / B
========================================     Leave 100 Cambridge St. at 4:06:10
PARK    -    |                           |      Arrive at platform 4:09:45
BOYL  56%    |   THE        56% 56% 56%  |
ARLI  48%    |   LINK       48% 53% 61%  |   Boston College @ Government Center :
COPL  52%    |EFFICIENCIES 52% 52% 52%  |     09:43 in  10:49 out 95% seats full
AUDI  55%    |   WOULD      55% 55% 55%  |   B U West  25:15 in  25:23 out
KENM  26%    |    BE        29% 37% 42%  |   One LRV directly ahead of this train
BLAN  30%    |   ....       30% 30% 30%  |   Another LRV about one block ahead.
BU.E  31%    |              31% 31% 31%  |
BU.C  19%    |              19% 20% 23%  |
========================================
      36%    AVERAGE LINK 37% 39% 42%
  GAIN IN RIDERS :
...Link Improvements only  3%  8% 17%
...Link & Dwell Improvements
                          10% 19% 31%
```

```
 B O S T O N   C O L L E G E    OUTBOUND #25  SHK  Rider      AVER. TRIP SPEED =   6.6  LOS F=
...TUESDAY, APRIL 16, 1985        Typed by:    SHK  FEB.25, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:30 P.M.          Checked by: SHK  MAY 4, 89   Previous Best  =  16.8  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES    |  STATION    Max166 Riders| DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9  STATIONS   |   TIME      |50\ STAND  |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV  |  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL
===========================================================================================
PARK STREET   | 40:29-41:18|100% 50% 65%| 49 - 14 = 35 F-| --    --    --     --     -- |131   --
BOYLSTON      | 44:40-44:58|100% 55% 69%| 18 - 10 =  8  C|202^- 42 =160^F= 1500'  5.1^ | 88  202
ARLINGTON     | 49:18-49:41|100% 65% 76%| 23 -  9 = 14  D|260^- 56 =204^F= 2000'  5.2^ | 66  260
COPLEY        | 52:04-52:44|100% 65% 76%| 40 - 11 = 29 F-|143 - 44 = 99 F= 1600'  7.6  |112  740
AUDITORIUM    | 54:19-55:25|100% 70% 79%| 66 -  9 = 57 F=| 95 - 75 = 20  B 2800' 20.1  | 85  225
KENMORE       | 58:47-59:16|100% 60% 72%| 29 -  9 = 20  F|202 - 51 =151 F= 2250'  7.6  |208  315
BLANDFORD     | 59:59-00:50|100% 80% 86%| 51 -  5 = 46 F=| 43 - 37 =  6  A 1100' 17.4  | 78  147
B.U.EAST     7:01:53-02:36|100% 80% 86%| 43 -  8 = 35 F=| 63 - 39 = 24  D 1400' 15.2  |180  154
B.U.CENTRAL   | 03:16-03:57|100% 85% 90%| 41 -  8 = 33 F=| 40 - 21 = 19  E  750' 12.8  | 73  178
===========================================================================================
* = Best Time  |  TOTALS :  --  --  --  360 - 83 =277  |1048-365 =683   13400'    -- |1021 2221
    Ever ...   |  AVERAGE: 100% 68% 78%  40 -  9 = 31 F=|131 - 46 = 85 F= 1675'  8.7  | 11  278|
^ = Worst Time |  MAXIMUM: 100% 85% 90%  66   14   57   |260   75  204     2800' 20.1  |208Worst
    Ever ..... |  MINIMUM: 100% 50% 65%  18    5    8   | 40   21    6      750'  5.1  |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING  8% LOST DWELL 13sec|LOST LINK 68 sec          51%|Worst
      STANDARD DEVIATION:  LOADING  8% LOST DWELL 14sec|LOST LINK 73 sec          76%|Link 740
-------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --       --   |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives      --     6:.40:.29 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip    13,400    7:.03:.16  22 :.47     6.6   |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ---------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ======================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================   Outbound service was disrupted.  At 6:13 a
PARK   -  |                          |   passenger at Arlington reported that he waited
BOYL  14% |    THE        34% 43% 50%|     1/2 hour and saw no outbound trains.
ARLI  15% |    LINK       36% 46% 53%|     Man in the collection booth knew nothing.
COPL  23% |EFFICIENCIES  40% 51% 58%|   Boston College @ Gov. Center 30:50 in  35:10 out
AUDI  60% |   WOULD       60% 60% 60%|     Train began moving out 31:32,  doors opened
KENM  20% |    BE         42% 53% 61%|       again, closed at 6:33:00 with 10 people seated.
BLAN  62% |   ....        62% 62% 62%|       35:10 start again, 35:44 stop, 37:40 start
BU.E  53% |               53% 57% 66%|       37:52 stop, 38:05 start.
BU.C  45% |               45% 57% 66%|
=======================================   @ B.U. West  05:32 in, 06:15 out  85% standees
      27%     AVERAGE LINK 47% 55% 61%
  GAIN IN RIDERS :
...Link Improvements only 74% 104%126%
...Link & Dwell Improvements
                          <<< <<< <<<%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #26  SHK  Rider     AVER. TRIP SPEED =   9.6  LOS E
.... TUESDAY, APRIL 23, 1985    Typed by:   SHK  FEB.25, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:45 P.M.        Checked by: SHK  MAY 4, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989=================
 2.5 MILES   |   STATION  Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST
9   STATIONS |    TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |      LINK
LRV (two) BV |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH |DWELL
==============================================================================================
PARK STREET  | 50:07-50:55|100% 50% 65%| 48 - 14 = 34 F-|  --   --   --     --    -- |131   --
BOYLSTON     | 51:43-52:07|100% 50% 65%| 24 - 10 = 14  D| 48 - 42 =  6  A 1500' 21.3| 88  202
ARLINGTON    | 53:35-54:02|100% 50% 65%| 27 -  9 = 18  F| 88 - 56 = 32  C 2000' 15.5| 66  260
COPLEY       | 55:08-55:47|100% 90% 93%| 39 - 11 = 28 F-| 66 - 44 = 22  C 1600' 16.5|112  740
AUDITORIUM   | 57:16-57:49|100% 90% 93%| 33 -  9 = 24 F-| 89 - 75 = 14  A 2800' 21.5| 85  225
KENMORE      | 59:06-59:55|100% 90% 93%| 49 -  9 = 40 F=| 77 - 51 = 26  C 2250' 19.9|208  315
BLANDFORD    5:00:40-01:15|100% 90% 93%| 35 -  5 = 30 F=| 45 - 37 =  8  B 1100' 16.7| 78  147
B.U.EAST     | 02:12-05:12|100% 75% 83%|180^-  8 =172^F=| 57 - 39 = 18  C 1400' 16.7|180  154
B.U.CENTRAL  | 05:48-06:14|100% 75% 83%| 26 -  8 = 18  F| 36 - 21 = 15  D  750' 14.2| 73  178
==============================================================================================
* = Best Time |  TOTALS :  --   --   -- 461 - 83 =378   |506 -365 =141   13400'   -- |1021 2221
   Ever ...   |  AVERAGE: 100% 73% 81%  51 -  9 = 42 F=| 63 - 46 = 18  B 1675' 18.1|  11  278|
^ = Worst Time|  MAXIMUM: 100% 90% 93% 180   14  172    | 89   75   32     2800' 21.5|208Worst
   Ever ..... |  MINIMUM: 100% 50% 65%  24    5   14    | 36   21    6      750' 14.2|   Dwell
--------   MEAN DEVIATION:  LOADING 13% LOST DWELL 33sec|LOST LINK  7 sec        12%|Worst
       STANDARD DEVIATION:  LOADING 12% LOST DWELL 47sec|LOST LINK  8 sec        16%|Link 740
----------------------------------------------------------------------------------------------
               DISTANCE   CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                 Feet      TIME      TIME      MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --    <:<<<:<<<    --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --    4:.50:.07 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400  5:.05:.48  15 :.41     9.6 |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
---------------------------------------------------| <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge   |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES            -------------------------------------------

       LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
    EFFICIENCY IMPROVED SO NONE WERE WORSE     =======================================
    THIS TRIP  THAN LOS .. E / C / B
======================================      Boston College @ Gov. Ctr. 47:03 in 48:00 out
PARK    -   |                         |     @ B.U. West  5:07:55 in  08:25 out
BOYL  57%   |    THE      57% 57% 57% |
ARLI  41%   |   LINK      41% 41% 50% |     Observations at Kenmore Square :  4:06 to 4:30
COPL  43%   |EFFICIENCIES 43% 43% 50% |     INBOUND ARRIVALS         OUTBOUND ARRIVALS
AUDI  78%   |   WOULD     78% 78% 78% |     Riverside 4:06:10
KENM  62%   |    BE       62% 62% 72% |     Boston Coll. 09:40
BLAN  76%   |   ....      76% 76% 76% |     Beacon Street 10:43
BU.E  64%   |             64% 64% 72% |     Boston Coll. 15:03       Cleveland Circ. 15:38
BU.C  48%   |             48% 55% 64% |     Riverside  15:50         Riverside  16:54
======================================      Riverside 20:00          Boston College  17:30
      58%    AVERAGE LINK 58% 59% 65%       Cleveland Circ. 21:06    Cleveland Circ. 18:30
  GAIN IN RIDERS :                          Beacon Street  21:58     Riverside  23:38
...Link Improvements only  0%  2% 12%       B.C. Non-stop  4:23      Boston College 24:15
...Link & Dwell Improvements                ???  4:23                Riverside  27:13
                          34% 43% 63%       Riverside 29:30          Boston Coll.  28:29
                                                                     Riverside  30:11
 B O S T O N   C O L L E G E   OUTBOUND #27  SHK  Rider     AVER. TRIP SPEED =   8.8  LOS F
.... MONDAY, APRIL 29, 1985     Typed by:    SHK  FEB.27, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  2:25 P.M.        Checked by: SHK  MAY 4, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9   STATIONS|    TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK|
LRV (two) BV|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL   |
=============================================================================================
PARK STREET  | 24:00-24:26|  80%   0% 24%| 26 - 14 = 12  C|  --   --   --    --      --  |131   --
BOYLSTON     | 25:40-26:09|100%   8% 36%| 29 - 10 = 19  E| 74 - 42 = 32  D 1500' 13.8  | 88  202|
ARLINGTON    | 28:02-28:22|100%  11% 38%| 20 -  9 = 11  D|113 - 56 = 57  F 2000' 12.1  | 66  260|
COPLEY       | 29:21-29:44|100%  12% 39%| 23 - 11 = 12  C| 59 - 44 = 15  B 1600' 18.5  |112  740|
AUDITORIUM   | 31:29-31:46|100%  12% 39%| 17 -  9 =  8  C|105 - 75 = 30  C 2800' 18.2  | 85  225|
KENMORE      | 33:30-33:50|100%  12% 39%| 20 -  9 = 11  D|104 - 51 = 53  F 2250' 14.8  |208  315|
BLANDFORD    | 34:32-35:35|100%  11% 38%| 63 -  5 = 58 F=| 42 - 37 =  5  A 1100' 17.9  | 78  147|
B.U.EAST     | 37:49-38:10|100%  10% 37%| 21 -  8 = 13  E|134 - 39 = 95 F= 1400'  7.1  |180  154|
B.U.CENTRAL  | 41:08-41:22|100%  10% 37%| 14 -  8 =  6  B|178^- 21 =157^F=  750'  2.9^ | 73  178|
=============================================================================================
* = Best Time  |  TOTALS :  --   --   --  233 - 83 =150    |809 -365 =444   13400'   --  |1021 2221
   Ever ...    |  AVERAGE:  98% 10% 36%   26 -  9 = 17  E|101 - 46 = 56 F- 1675' 11.3  |  11  278|
^ = Worst Time|  MAXIMUM: 100% 12% 39%   63    14    58   |178   75  157     2800' 18.5  |208Worst|
   Ever .....|  MINIMUM:  80%  0% 24%   14     5     6   | 42   21    5      750'  2.9  |   Dwell|
~~~~~~~~  MEAN DEVIATION:  LOADING  3% LOST DWELL 11sec|LOST LINK 36 sec           39%|Worst   |
      STANDARD DEVIATION:  LOADING  4% LOST DWELL 15sec|LOST LINK 46 sec           52%|Link 740|
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK     ELAPSED   SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME      TIME      MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --    <:<<<:<<<     --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --    2:.24:.00 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   2:.41:.08  17 :.08    8.8    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line , 12,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------ |<<<<<<<<<<<> more                more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |        LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ---------------------------------------
```

```
      LINK    SUPPOSE ALL LINK TIMES WERE
   EFFICIENCY IMPROVED SO NONE WERE WORSE
   THIS TRIP  THAN LOS .. E / C / B
=========================================
PARK     -   |                           |
BOYL   14%   |    THE       14% 16% 18%  |
ARLI   18%   |    LINK      19% 24% 28%  |
COPL   28%   |EFFICIENCIES  28% 28% 28%  |
AUDI   28%   |   WOULD      28% 28% 28%  |
KENM   19%   |    BE        21% 26% 30%  |
BLAN   34%   |   ....       34% 34% 34%  |
BU.E   11%   |              20% 25% 29%  |
BU.C    4%   |              19% 25% 28%  |
=========================================
      16%    AVERAGE LINK 22% 25% 27%
 GAIN IN RIDERS :
...Link Improvements only 38% 56% 69%
...Link & Dwell Improvements
                          40% 59% 76%
```

```
  TRIP NOTES -- OTHER TRAINS AND COMMENTS
  =======================================

Riverside @ Govmt. Ctr. 4:20:35 in 21:25 out
Boston College @ Govmt. Ctr.   21:17 in   22:00 out
         7 people seated
@ B.U.West  42:51 in   43:09 out
```

```
 B O S T O N   C O L L E G E   OUTBOUND #28  SHK  Rider     AVER. TRIP SPEED =   9.5  LOS E
.... MONDAY, AUGUST 26, 1985    Typed by:    SHK  FEB.27, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:15 P.M.       Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS  |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS·BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV  |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS       MPH |DWELL
=============================================================================================
PARK STREET  | 19:43-20:11|100%  1% 31%| 28 - 14 = 14  C| --    --   --    --      -- |131  --
BOYLSTON     | 22:28-22:48|100%  1% 31%| 20 - 10 = 10  C|137 - 42 = 95 F= 1500'  7.5 | 88  202
ARLINGTON    | 24:35-25:00|100%  2% 32%| 25 -  9 = 16  E|107 - 56 = 51  E 2000' 12.7 | 66  260
COPLEY       | 26:25-26:42| 96%  0% 29%| 17 - 11 =  6  B| 85 - 44 = 41  E 1600' 12.8 |112  740
AUDITORIUM   | 28:30-28:44| 96%  0% 29%| 14 -  9 =  5  B|108 - 75 = 33  C 2800' 17.7 | 85  225
KENMORE      | 30:20-30:35| 96%  0% 29%| 15 -  9 =  6  B| 96 - 51 = 45  E 2250' 16.0 |208  315
BLANDFORD    | 31:17-31:36| 96%  0% 29%| 19 -  5 = 14 F-| 42 - 37 =  5  A 1100' 17.9 | 78  147
B.U.EAST     | 32:20-32:33|100%  0% 30%| 13 -  8 =  5  B| 44 - 39 =  5  A 1400' 21.7 |180  154
B.U.CENTRAL  | 35:31-35:56|100% 13% 39%| 25 -  8 = 17  F|178^- 21 =157^F=  750'  2.9^| 73  178
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  176 - 83 = 93   |797 -365 =432   13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  98%  2% 31%  20 -  9 = 10  C|100 - 46 = 54  F 1675' 11.5 | 11  278
^ = Worst Time|  MAXIMUM: 100% 13% 39%  28   14   17   |178   75  157     2800' 21.7 |208Worst
    Ever .....|  MINIMUM:  96%  0% 29%  13    5    5   | 42   21    5      750'  2.9 |   Dwell
~~~~~~~~     MEAN DEVIATION:  LOADING  2% LOST DWELL  5sec|LOST LINK 36 sec          41%|Worst
        STANDARD DEVIATION:  LOADING  3% LOST DWELL  5sec|LOST LINK 47 sec          63%|Link 740
---------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet      TIME       TIME    MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...       --    <:<<<:<<<      --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform   2,500    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives        --    6:.19:.43 <<< :<<<    --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400    6:.35:.31  15 :.48    9.5   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ========================================
   THIS TRIP   THAN LOS .. E / C / B
=====================================          Beacon Train @ Park  15:57 in, 16:40 out
PARK    -   |                          |       Boston Coll. @ Park  17:30 in 17:57 out
BOYL   10%  |     THE       16% 21% 24%|
ARLI   16%  |     LINK      16% 21% 24%|       @ B.U. West  6:37:24 in  37:39 out
COPL   17%  |EFFICIENCIES   17% 21% 25%|
AUDI   20%  |    WOULD      20% 20% 22%|
KENM   15%  |     BE        15% 19% 22%|
BLAN   26%  |    ....       26% 26% 26%|
BU.E   26%  |               26% 26% 26%|
BU.C    4%  |               16% 20% 23%|
=====================================
     14%    AVERAGE LINK 19% 22% 24%
  GAIN IN RIDERS :
...Link Improvements only 36% 57% 71%
...Link & Dwell Improvements
                          31% 51% 68%
```

```
 B O S T O N  C O L L E G E  OUTBOUND #29  SHK  Rider     AVER. TRIP SPEED =   8.3  LOS F
...THURSDAY, JANUARY 30, 1986   Typed by:   SHK  FEB.27, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:50 P.M.       Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
  2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST  |
 9  STATIONS |   TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=========================================================================================
PARK STREET | 54:17-55:15|100% 70% 79%| 58 - 14 = 44 F=| --   --   --      --    -- |131  --
BOYLSTON    | 56:12-56:53|100% 90% 93%| 41 - 10 = 31 F=| 57 - 42 = 15  B 1500' 17.9 | 88  202
ARLINGTON   | 58:39-59:11|100% 95% 97%| 32 -  9 = 23 F-|106 - 56 = 50  E 2000' 12.9 | 66  260
COPLEY     5:00:35-01:26|100% 70% 79%| 51 - 11 = 40 F=| 84 - 44 = 40  E 1600' 13.0 |112  740
AUDITORIUM  | 03:38-04:06|100% 70% 79%| 28 -  9 = 19  F|132 - 75 = 57  D 2800' 14.5 | 85  225
KENMORE     | 05:59-06:55|100% 95% 97%| 56 -  9 = 47 F=|113 - 51 = 62 F- 2250' 13.6 |208  315
BLANDFORD   | 07:55-08:52|100% 95% 97%| 57 -  5 = 52 F=| 60 - 37 = 23  D 1100' 12.5 | 78  147
B.U.EAST    | 10:45-11:39|100% 98% 99%| 54 -  8 = 46 F=|113 - 39 = 74 F= 1400'  8.4 |180  154
B.U.CENTRAL | 12:25-13:05|100% 99% 99%| 40 -  8 = 32 F=| 46 - 21 = 25  F  750' 11.1 | 73  178
=========================================================================================
* = Best Time |  TOTALS :  --  --  --  417 - 83 =334   |711 -365 =346   13400'   -- |1021 2221
   Ever ...   |  AVERAGE: 100% 87% 91%  46 -  9 = 37 F=| 89 - 46 = 43  E 1675' 12.9 | 11  278
^ = Worst Time|  MAXIMUM: 100% 99% 99%  58    14    52 |132   75   74    2800' 17.9 |208Worst
   Ever .....|  MINIMUM: 100% 70% 79%  28     5    19 | 46   21   15     750'  8.4 |   Dwell
~~~~~~~~    MEAN DEVIATION:  LOADING  9% LOST DWELL 11sec|LOST LINK 18 sec          12%|Worst
      STANDARD DEVIATION:  LOADING  9% LOST DWELL 11sec|LOST LINK 20 sec          27%|Link 740
-----------------------------------------------------------------------------------------
                DISTANCE  CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                  Feet     TIME       TIME    MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --    <:<<<:<<<    --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<< |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --    4:.54:.17 <<< :<<<   --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   5:.12:.25  18 :.08   8.3  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<< |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<< |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<< |   DWELL 3.0   or  => F=  <= 1.5  or  LINK
---------------------------------------------------| <<<<<<<<<<<> more          more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge   |     LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES            ----------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ======================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================     Arrived at Government Center Platform  4:42
PARK    -  |                          |     Beacon LRV-2  43:52 in  44:27 out
BOYL  58%  |    THE        58% 58% 58% |     Riverside LRV-244:50 in  45:15 out
ARLI  49%  |   LINK        49% 62% 72% |     Kenmore LRV-1  45:34 in
COPL  51%  |EFFICIENCIES   51% 65% 75% |     Kenmore LRV-1 (sign says Lechmere) 49:10/50:20
AUDI  45%  |   WOULD       45% 53% 61% |     Beacon LRV-2  50:40 in 51:30 out
KENM  36%  |    BE         42% 53% 61% |     Boston College 51:50 in  52:25 out 10 standees
BLAN  60%  |   ....        60% 65% 75% |     @ B.U. West  14:40 in  15:31 out  100% standees
BU.E  33%  |               51% 65% 75% |     5:20:30  still no train visible on the
BU.C  45%  |               52% 66% 76% |            outbound tracks.
=======================================
    47%    AVERAGE LINK 51% 61% 70%
  GAIN IN RIDERS :
...Link Improvements only  9% 30% 49%
...Link & Dwell Improvements
                           32% 60% 86%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #30  SHK  Rider     AVER. TRIP SPEED =   9.1  LOS E
.... FRIDAY, JANUARY 31, 1986   Typed by:    SHK  FEB.27, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:25 P.M.       Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LIN
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
==============================================================================================
PARK STREET  | 25:13-26:23|100% 50% 65%| 70 - 14 = 56 F=|  --   --   --     --     -- |131  --
BOYLSTON     | 27:31-28:08|100% 60% 72%| 37 - 10 = 27 F-|  68 - 42 =-26  D 1500' 15.0 | 88  202
ARLINGTON    | 30:09-30:53|100% 80% 86%| 44 -  9 = 35 F=|121 - 56 = 65  F 2000' 11.3 | 66  260
COPLEY       | 32:06-33:01|100% 75% 83%| 55 - 11 = 44 F=|  73 - 44 = 29  D 1600' 14.9 |112  740
AUDITORIUM   | 34:46-35:36|100% 70% 79%| 50 -  9 = 41 F=|105 - 75 = 30  C 2800' 18.2 | 85  225
KENMORE      | 37:06-37:49|100% 40% 58%| 43 -  9 = 34 F=|  90 - 51 = 39  D 2250' 17.0 |208  315
BLANDFORD    | 38:40-39:31|100% 40% 58%| 51 -  5 = 46 F=|  51 - 37 = 14  B 1100' 14.7 | 78  147
B.U.EAST     | 40:38-41:11|100% 40% 58%| 33 -  8 = 25 F=|  67 - 39 = 28  D 1400' 14.2 |180  154
B.U.CENTRAL  | 41:50-42:34|100% 50% 65%| 44 -  8 = 36 F=|  39 - 21 = 18  E  750' 13.1 | 73  178
==============================================================================================
* = Best Time |  TOTALS :  --  --  --  427 - 83 =344   |614 -365 =249    13400'    -- |1021 222
    Ever ...  |  AVERAGE: 100% 56% 69%  47 -  9 = 38 F=|  77 - 46 = 31  D 1675' 14.9 |  11  278
^ = Worst Time|  MAXIMUM: 100% 80% 86%  70    14    56  |121   75   65    2800' 18.2 |208Worst
    Ever .....|  MINIMUM: 100% 40% 58%  33     5    25  |  39   21   14     750' 11.3 |   Dwell
~~~~~~~~   MEAN DEVIATION:   LOADING 11% LOST DWELL  9sec|LOST LINK 10 sec           9%|Worst
     STANDARD DEVIATION:   LOADING 10% LOST DWELL  9sec|LOST LINK 15 sec          14%|Link 740
----------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME      MPH    |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --        --     |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<     |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives      --     5:.25:.13 <<< :<<<     --      |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip    13,400    5:.41:.50  16 :.37     9.1     |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<     |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<     |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<     |   DWELL 3.0   or  => F=  <= 1.5   or  LINK
---------------------------------------------------------| <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge          |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                    ---------------------------------------

     LINK     SUPPOSE ALL LINK TIMES WERE        TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE        ========================================
  THIS TRIP   THAN LOS .. E / C / B
=======================================       Platform at Government Center full at 5:01
PARK    -   |                          |      Kenmore LRV-1   5:01:50 out
BOYL  40%   |   THE         40% 43% 50%|      Kenmore LRV-1 02:30 in  04:27 out
ARLI  33%   |   LINK        38% 48% 55%|      Kenmore LRV-107:41 in 09:25 out
COPL  52%   |EFFICIENCIES 52% 57% 66%|      Beacon  LRV-1 09:50 in
AUDI  59%   |   WOULD       59% 59% 59%|      Kenmore LRV-1  11:23 in  12:40 out
KENM  45%   |    BE         45% 53% 61%|      Riverside LRV-2  13:04 in 14:44 out
BLAN  42%   |   ....        42% 42% 42%|         (arrived empty, left jammed full)
BU.E  34%   |               34% 39% 45%|      Beacon LRV-1 15:40 in 17:20 out
BU.C  31%   |               31% 39% 45%|      Boston Coll LRV-2 17:20 in 20:01 out 90% full
=======================================       Beacon LRV-2 20:45 in 22:07 out
     41%    AVERAGE LINK 42% 47% 52%          Boston Coll. 22:25 in  23:10 out  60% seats
  GAIN IN RIDERS :                                (Riverside train right behind)
...Link Improvements only  2% 15% 27%         @ B.U.West 44:27 in  47:10 out
...Link & Dwell Improvements                    (Motorman in second car got out, talked with
                           28% 47% 67%            motorman in the first car. Train was made
                                                  into an express. 3/4 of the people got off.)
                                              Next train 47:47 in 48:55 out; next train 53:20 i
```

```
 B O S T O N   C O L L E G E   OUTBOUND #31  SHK  Rider     AVER. TRIP SPEED =  11.8  LOS C
.... MONDAY, FEBRUARY 3, 1986   Typed by:    SHK  FEB.27, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:50 P.M.       Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST  |
9  STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL  ,
=======================================================================================
PARK STREET | 53:40-54:10| 20%  0%  6%| 30 - 14 = 16  C| --   --   --     --    -- |131  --
BOYLSTON    | 55:14-55:37| 28%  0%  8%| 23 - 10 = 13  D| 64 - 42 = 22  C 1500' 16.0 | 88  202
ARLINGTON   | 57:12-57:28| 40%  0% 12%| 16 -  9 =  7  B| 95 - 56 = 39  D 2000' 14.4 | 66  260
COPLEY      | 58:22-58:41| 60%  0% 18%| 19 - 11 =  8  B| 54 - 44 = 10  B 1600' 20.2 |112  740
AUDITORIUM 7:00:22-00:42| 64%  0% 19%| 20 -  9 = 11  D|101 - 75 = 26  B 2800' 18.9 | 85  225
KENMORE     | 02:17-02:32| 56%  0% 17%| 15 -  9 =  6  B| 95 - 51 = 44  E 2250' 16.1 |208  315
BLANDFORD   | 03:22-04:15| 56%  0% 17%| 53 -  5 = 48 F=| 50 - 37 = 13  B 1100' 15.0 | 78  147
B.U.EAST    | 05:18-05:40| 52%  0% 16%| 22 -  8 = 14  E| 63 - 39 = 24  D 1400' 15.2 |180  154
B.U.CENTRAL | 06:30-06:46| 60%  0% 18%| 16 -  8 =  8  C| 50 - 21 = 29 F-  750' 10.2 | 73  178
=========================================================================================
* = Best Time |  TOTALS :    --   --  --  214 - 83 =131  |572 -365 =207   13400'    -- |1021 2221
   Ever ...   |  AVERAGE:   48%   0% 15%  24 -  9 = 15  D| 72 - 46 = 26  C 1675' 16.0 | 11  278|
^ = Worst Time|  MAXIMUM:   64%   0% 19%  53   14    48  |101   75   44     2800' 20.2 |208Worst|
   Ever .....|  MINIMUM:   20%   0%  6%  15    5     6  | 50   21   10      750' 10.2 |   Dwell|
~~~~~~~~   MEAN DEVIATION:  LOADING   4% LOST DWELL  9sec|LOST LINK  9 sec          11% |Worst   |
     STANDARD DEVIATION:  LOADING   4% LOST DWELL 12sec|LOST LINK 11 sec          18% |Link 740|
-----------------------------------------------------------------------------------------
               DISTANCE   CLOCK       ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                 Feet      TIME        TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<     --       --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500  <:<<<:<<< <<< :<<<  <<<<<     |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --     6:.53:.40 <<< :<<<   --      |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400  7:.06:.30  12 :.50   11.8     |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<  <<<<<     |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700  <:<<<:<<< <<< :<<<  <<<<<     |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500  <:<<<:<<< <<< :<<<  <<<<<     |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------|<<<<<<<<<<<> more               more   |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES              ------------------------------------------

        LINK     SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
     EFFICIENCY IMPROVED SO NONE WERE WORSE       ========================================
     THIS TRIP  THAN LOS .. E / C / B
=======================================        Arrive at Government Center platform  6:35
PARK    -    |                         |         ----- LRV-1      6:35:20 out
BOYL    4%   |     THE          4%  4%  5%|      Beacon  LRV-1 36:10 in  36:40 out
ARLI    5%   |    LINK          5%  5%  6%|      Kenmore LRV-1 37:15 in  37:35 out
COPL   10%   |EFFICIENCIES 10% 10% 10%|      Riverside LRV-1 38:55 in 39:14 out
AUDI   13%   |    WOULD        13% 13% 13%|      Boston Coll. LRV-2  40:10 in 40:40 out
KENM   10%   |     BE          10% 13% 15%|      Kenmore LRV-1 41:00 in  41:12 out
BLAN   13%   |    ....         13% 13% 13%|      Beacon  LRV-1 41:23 in  41:40  out
BU.E   11%   |                 11% 11% 13%|      Kenmore LRV-1 48:20 in  48:56 out
BU.C    7%   |                  8% 11% 12%|      Riverside LRV-1 50:16 in 50:50 out
=======================================        Boston Coll. LRV-2 51:33 in  51:55 out 1 seated.
      10%    AVERAGE LINK 10% 11% 11%           @ B.U. West  08:04 in  08:20 out
  GAIN IN RIDERS :
...Link Improvements only  0% 10% 10%
...Link & Dwell Improvements
                           4% 12% 23%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #32  SHK  Rider     AVER. TRIP SPEED =   4.8  LOS F=
..WEDNESDAY, FEBRUARY 5, 1986   Typed by:    SHK  FEB.27, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:50 P.M.        Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL
=============================================================================================
PARK STREET | 54:40-55:13|100% 20% 44%| 33 - 14 = 19  D| --    --    --      --     --|131  --
BOYLSTON    | 56:10-56:35|100% 20% 44%| 25 - 10 = 15  D| 57 - 42 = 15  B 1500' 17.9 | 88  202
ARLINGTON   | 58:20-58:46|100% 20% 44%| 26 -  9 = 17  E|105 - 56 = 49  E 2000' 13.0 | 66  260
COPLEY      | 59:56-00:36|100% 27% 49%| 40 - 11 = 29 F-| 70 - 44 = 26  C 1600' 15.6 |112  740
AUDITORIUM  7:02:17-02:43|100% 13% 39%| 26 -  9 = 17  E|101 - 75 = 26  B 2800' 18.9 | 85  225
KENMORE     | 04:26-04:44|100%  8% 36%| 18 -  9 =  9  C|103 - 51 = 52  F 2250' 14.9 |208  315
BLANDFORD   | 14:49-23:08| 50%  0% 15%|499~-  5 =494~F=|605~- 37 =568~F= 1100'  1.2^| 78  147
B.U.EAST    | 24:30-24:41| 50%  0% 15%| 11 -  8 =  3  A| 82 - 39 = 43  F 1400' 11.6 |180  154
B.U.CENTRAL | 25:30-25:56| 50%  0% 15%| 26 -  8 = 18  F| 49 - 21 = 28 F-  750' 10.4 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  704 - 83 =621   |1172-365 =807   13400'    -- |1021 2221
   Ever ...   |  AVERAGE:  83% 12% 33%  78 -  9 = 69 F=|147 - 46 =101 F= 1675'  7.8 | 11  278
^ = Worst Time|  MAXIMUM: 100% 27% 49% 499   14   494  |605   75  568     2800' 18.9 |208Worst
   Ever .....|  MINIMUM:  50%  0% 15%  11    5    3   | 49   21   15      750'  1.2 |   Dwell
~~~~~~~~~  MEAN DEVIATION:  LOADING 14% LOST DWELL106sec|LOST LINK 117sec          77% |Worst
     STANDARD DEVIATION:  LOADING 13% LOST DWELL150sec|LOST LINK 177sec         106% |Link 740
---------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<      --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --     6:.54:.40 <<< :<<<    --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   7:.25:.30  30 :.50    4.8   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------|<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ----------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE        TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE         ======================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================        At Government Center :
PARK    -   |                          |       Riverside 6:49:35 in  50:20 out
BOYL  32%   |    THE        32% 32% 32%|       Boston College 50:43  Express -- bad wheel
ARLI  23%   |   LINK        23% 29% 34%|       Boston College 52:06 in  52:38 out  0 standees
COPL  28%   |EFFICIENCIES   28% 28% 34%|       Train delay at Kenmore : 4:26 in 4:44 doors closed
AUDI  36%   |   WOULD       36% 36% 36%|        7:05:13 doors open/close quickly
KENM  19%   |    BE         21% 26% 30%|        7:06:40 lights off for 5 seconds
BLAN   2%   |   ....        19% 24% 28%|        7:07:00 doors open and close  no annoucements
BU.E   7%   |                8% 10% 12%|          12:50 start 13:33 stop 14:14 start 14:42 stop
BU.C   6%   |                8% 10% 12%|          14:49 doors open and stop at Blandford
=======================================        Announcement of disabled train. All passengers off
       NA    AVERAGE LINK 20% 23% 25%          Disabled train moved out at 18:08
  GAIN IN RIDERS :                             Boston College LRV-1 18:55 in  20:18 out jammed
...Link Improvements only NA  NA  NA             22:10 moves through intersection
...Link & Dwell Improvements                   LRV-2 enters platform with lights off appr. 21:00
                                                 22:30 lights on. People get on second LRV unit
                                                 23:08  train leaves Blandford.
                                               At BUWest : 27:12 in  27:28 out  3/4 seat
                                                 Following train LRV-2 in at 28:08
                                                 Following LRV-2 in at 28:58
                                               6 units in 90 seconds
```

```
 B O S T O N   C O L L E G E   OUTBOUND #33  SHK  Rider     AVER. TRIP SPEED =   9.4  LOS E
.... FRIDAY, FEBRUARY 7, 1986   Typed by:    SHK  MAR. 3, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:20 P.M.       Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST   |
9   STATIONS  |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED   |    LINK |
LRV (two) BV  |  IN   OUT |SEATS  TOTAL |sec. TIME TIME S|sec. TIME TIME LOS     MPH    |DWELL    |
==========================================================================================|
PARK STREET   | 22:20-22:57|100%  5% 34%| 37 - 14 = 23  E| --   --   --     --      --  |131  --  |
BOYLSTON      | 24:16-24:32|100% 11% 38%| 16 - 10 =  6  B| 79 - 42 = 37  E 1500' 12.9  | 88  202 |
ARLINGTON     | 26:20-26:39|100% 13% 39%| 19 -  9 = 10  C|108 - 56 = 52  E 2000' 12.6  | 66  260 |
COPLEY        | 28:23-28:48|100% 40% 58%| 25 - 11 = 14  D|104 - 44 = 60 F- 1600' 10.5  |112  740 |
AUDITORIUM    | 30:30-30:52|100% 40% 58%| 22 -  9 = 13  D|102 - 75 = 27  B 2800' 18.7  | 85  225 |
KENMORE       | 34:24-34:52|100% 60% 72%| 28 -  9 = 19  F|212 - 51 =161 F= 2250'  7.2  |208  315 |
BLANDFORD     | 35:37-36:32|100% 60% 72%| 55 -  5 = 50 F=| 45 - 37 =  8  B 1100' 16.7  | 78  147 |
B.U.EAST      | 37:18-37:47|100% 70% 79%| 29 -  8 = 21 F-| 46 - 39 =  7  A 1400' 20.8  |180  154 |
B.U.CENTRAL   | 38:19-38:43|100% 70% 79%| 24 -  8 = 16  F| 32 - 21 = 11  C  750' 16.0  | 73  178 |
===========================================================================================
* = Best Time  |  TOTALS :  --  --  --  255 - 83 =172   |728 -365 =363   13400'    --  |1021 2221
    Ever ...   |  AVERAGE: 100% 41% 59%  28 -  9 = 19  F| 91 - 46 = 45  E 1675' 12.5  | 11  278|
^ = Worst Time |  MAXIMUM: 100% 70% 79%  55   14   50   |212   75  161     2800' 20.8  |208Worst|
    Ever .....|  MINIMUM: 100%  5% 34%  16    5    6   | 32   21    7      750'  7.2  |   Dwell|
~~~~~~~~   MEAN DEVIATION:  LOADING 17% LOST DWELL  9sec|LOST LINK 34 sec           27%|Worst   |
      STANDARD DEVIATION:  LOADING 17% LOST DWELL 12sec|LOST LINK 48 sec           44%|Link 740|
------------------------------------------------------------------------------------------|
              DISTANCE  CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                Feet     TIME      TIME    MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...   --    <:<<<:<<<    --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500  <:<<<:<<< <<< :<<<  <<<<< |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives    --    4:.22:.20 <<< :<<<   --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400  4:.38:.19  15 :.59   9.4  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ... 3,800  <:<<<:<<< <<< :<<<  <<<<< |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ... 19,700  <:<<<:<<< <<< :<<<  <<<<< |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line  12,500  <:<<<:<<< <<< :<<<  <<<<< |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------| <<<<<<<<<<<> more            more       |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge |      LEVEL OF SERVICE CRITERIA          |
LRV CAPACITY :  50 SEATS + 116 STANDEES          ------------------------------------------

    LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY IMPROVED SO NONE WERE WORSE      ========================================
 THIS TRIP  THAN LOS .. E / C / B
=======================================    Arrive at Government Center Platform  4:19
PARK    -   |                          |   Beacon St LRV-1  19:32 in  20:00 out
BOYL  18%   |    THE        18% 23% 26%|   Boston College LRV-2  20:18 in  20:43 out  7 seat
ARLI  20%   |   LINK        20% 25% 29%|   BC @ B.U.West  39:35 in   39:56 out
COPL  17%   |EFFICIENCIES   21% 26% 30%|
AUDI  43%   |   WOULD       43% 43% 43%|
KENM  14%   |    BE         31% 39% 45%|
BLAN  59%   |   ....        59% 59% 59%|
BU.E  61%   |               61% 61% 61%|
BU.C  52%   |               52% 52% 61%|
=======================================
     30%    AVERAGE LINK 36% 42% 46%
  GAIN IN RIDERS :
...Link Improvements only 20% 40% 53%
...Link & Dwell Improvements
                          26% 45% 63%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #34  SHK  Rider     AVER. TRIP SPEED =  10.0  LOS E
.... MONDAY, FEBRUARY 10, 1986  Typed by:   SHK  MAR. 3, 89  Previous Worst =   4.9  LOS F=
 ..Begin Trip  3:15 P.M.       Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION    Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST
9   STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (one) BV|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH   |DWELL
=============================================================================================
PARK STREET  | 16:20-16:59|100% 30% 51%|  39 - 14 = 25  E|  --   --   --     --     -- |131   --
BOYLSTON     | 18:00-18:17|100% 30% 51%|  17 - 10 =  7  B|  61 - 42 = 19  C 1500' 16.8 | 88  202
ARLINGTON    | 20:04-20:44|100% 25% 48%|  40 -  9 = 31 F=| 107 - 56 = 51  E 2000' 12.7 | 66  260
COPLEY       | 21:30-21:30|100% 25% 48%|   0 - 11 = NA   |  46 - 44 =  2  A 1600' 23.7 |112  740
AUDITORIUM   | 23:25-23:25|100% 25% 48%|   0 -  9 = NA   | 115 - 75 = 40  C 2800' 16.6 | 85  225
KENMORE      | 25:19-25:54|100% 30% 51%|  35 -  9 = 26 F-| 114 - 51 = 63 F- 2250' 13.5 |208  315
BLANDFORD    | 26:41-27:39|100% 85% 90%|  58 -  5 = 53 F=|  47 - 37 = 10  B 1100' 16.0 | 78  147
B.U.EAST     | 29:43-30:45|100% 85% 90%|  62 -  8 = 54 F=| 124 - 39 = 85 F= 1400'  7.7 |180  154
B.U.CENTRAL  | 31:22-32:06|100% 85% 90%|  44 -  8 = 36 F=|  37 - 21 = 16  D  750' 13.8 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --   295 - 83 =232    |651 -365 =286    13400'    --  |1021 2221
   Ever ...   |  AVERAGE: 100% 47% 63%   33 -  9 = 26 F-  | 81 - 46 = 36  D 1675' 14.0  |  11  278
^ = Worst Time|  MAXIMUM: 100% 85% 90%   62    14    54   |124   75   85     2800' 23.7  |208Worst
   Ever .....|  MINIMUM: 100% 25% 48%    0     5     7    | 37   21    2      750'  7.7  |   Dwell
~~~~~~~~~  MEAN DEVIATION:  LOADING 20% LOST DWELL NAsec|LOST LINK 24 sec          20%|Worst
       STANDARD DEVIATION:  LOADING 19% LOST DWELL 15sec|LOST LINK 27 sec          36%|Link 740
---------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME        TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<      --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform   2,500    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     3:.16:.20 <<< :<<<    --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400    3:.31:.22  15 :.02   10.0    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
--------------------------------------------------------| <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                  --------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE         TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE         =======================================
   THIS TRIP  THAN LOS .. E / C / B
======================================         Boston Coll. @ Gov. Center 3:13:07 in 13:37 out
PARK     -   |                          |                      20 seats (80%)
BOYL  35%    |    THE         35% 35% 39%|      Announcement at Arlington : "First Stop will
ARLI  27%    |   LINK         27% 34% 39%|           be Kenmore"
COPL  46%    |EFFICIENCIES 46% 46% 46%|      Copley and Auditorium stops were skipped.
AUDI  31%    |   WOULD        31% 31% 37%|
KENM  21%    |    BE          25% 32% 37%|      B.U. West 33:30 in  34:00 out  85% standees
BLAN  40%    |   ....         40% 40% 40%|      following train at B.U. West 34:20 in
BU.E  28%    |                47% 60% 69%|
BU.C  51%    |                51% 60% 69%|
======================================
      35%    AVERAGE LINK 39% 44% 50%
  GAIN IN RIDERS :
...Link Improvements only 11% 26% 43%
...Link & Dwell Improvements
                          30% 48% 68%
```

```
 BOSTON COLLEGE    OUTBOUND #35  SHK  Rider     AVER. TRIP SPEED =   8.5  LOS F
.WEDNESDAY, FEBRUARY 12, 1986   Typed by:    SHK  MAR. 3, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:50 P.M.        Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders| DWELL TIME    L| STATION-STATION or "LINK"  | WORST
9  STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH |DWELL
=============================================================================================
PARK STREET | 50:54-52:03|100% 65% 76%| 69 - 14 = 55 F=|  --    --   --     --    -- |131   --
BOYLSTON    | 53:30-54:03|100% 70% 79%| 33 - 10 = 23  F| 87 - 42 = 45  F 1500' 11.8 | 88  202
ARLINGTON   | 55:41-56:29|100% 75% 83%| 48 -  9 = 39 F=| 98 - 56 = 42  D 2000' 13.9 | 66  260
COPLEY      | 57:31-58:32|100% 80% 86%| 61 - 11 = 50 F=| 62 - 44 = 18  C 1600' 17.6 |112  740
AUDITORIUM 6:01:42-02:14|100% 80% 86%| 32 -  9 = 23 F-|190 - 75 =115 F= 2800' 10.0 | 85  225
KENMORE     | 05:01-05:30|100% 40% 58%| 29 -  9 = 20  F|167 - 51 =116 F= 2250'  9.2 |208  315
BLANDFORD   | 06:16-06:34|100% 40% 58%| 18 -  5 = 13 F-| 46 - 37 =  9  B 1100' 16.3 | 78  147
B.U.EAST    | 07:31-07:50|100% 40% 58%| 19 -  8 = 11  D| 57 - 39 = 18  C 1400' 16.7 |180  154
B.U.CENTRAL | 08:32-08:52|100% 35% 55%| 20 -  8 = 12  D| 42 - 21 = 21  F  750' 12.2 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  329 - 83 =246   |749 -365 =384   13400'    -- |1021 2221
    Ever ...  |  AVERAGE: 100% 58% 71%  37 -  9 = 27 F-| 94 - 46 = 48  F 1675' 12.2 |  11  278
^ = Worst Time|  MAXIMUM: 100% 80% 86%  69    14    55  |190   75  116     2800' 17.6 |208Worst
    Ever .....|  MINIMUM: 100% 35% 55%  18     5    11  | 42   21    9      750'  9.2 |   Dwell
--------  MEAN DEVIATION:  LOADING 14% LOST DWELL 15sec|LOST LINK 34 sec          19% |Worst
      STANDARD DEVIATION:  LOADING 13% LOST DWELL 16sec|LOST LINK 41 sec          29% |Link 740
---------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH  |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --    <:<<<:<<<     --       --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --    5:.50:.54 <<< :<<<     --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   6:.08:.32  17 :.38    8.5   |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.4 -3.0 =>  F- <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 3.0   or  => F= <= 1.5   or  LINK
-----------------------------------------------------| <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES               ------------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ======================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================    40 people at Government Center platform :
PARK    -   |                          |   Riverside LRV-2          36:00 out
BOYL  37%   |    THE       40% 51% 58% |   Cleveland Circle LRV-2  37:12 in  37:43 out
ARLI  45%   |    LINK      45% 53% 61% |   Riverside 40:06 in  40:46 out
COPL  59%   |EFFICIENCIES 59% 59% 64% |   Beacon LRV-1  45:30 in  47:03 out
AUDI  34%   |    WOULD     45% 57% 66% |   Boston College LRV-2  48:10 in  49:04 out
KENM  26%   |     BE       45% 57% 66% |      (doors closed at 48:40  5 standees
BLAN  47%   |    ....      47% 47% 47% |   @ B.U.West  10:20 in  10:40 out
BU.E  40%   |              40% 40% 45% |
BU.C  29%   |              29% 39% 45% |
=======================================
     35%    AVERAGE LINK 42% 49% 55%
  GAIN IN RIDERS :
...Link Improvements only 20% 40% 57%
...Link & Dwell Improvements
                          29% 52% 76%
 B O S T O N   C O L L E G E   OUTBOUND #36  SHK  Rider     AVER. TRIP SPEED =   8.8  LOS F
... TUESDAY, FEBRUARY 25, 1986  Typed by:    SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:50 P.M.        Checked by: SHK  MAY 6, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION    Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"     | WORST
9   STATIONS|   TIME      |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED    |    LINK
LRV (two) BV|  IN    OUT  |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH    |DWELL
=============================================================================================
PARK STREET | 52:06-52:55|100% 33% 53%| 49 - 14 = 35 F-| --   --   --     --      --   |131  --  |
BOYLSTON    | 54:05-54:17|100% 33% 53%| 12 - 10 =  2  A| 70 - 42 = 28  D 1500' 14.6   | 88  202 |
ARLINGTON   | 57:34-58:08|100% 40% 58%| 34 -  9 = 25 F-|197 - 56 =141 F= 2000'  6.9   | 66  260 |
COPLEY      | 59:55-00:39|100% 50% 65%| 44 - 11 = 33 F=|107 - 44 = 63 F- 1600' 10.2   |112  740 |
AUDITORIUM 6:02:57-03:24|100% 40% 58%| 27 -  9 = 18  F|138 - 75 = 63  E 2800' 13.8   | 85  225 |
KENMORE     | 05:11-05:43|100% 35% 55%| 32 -  9 = 23 F-|107 - 51 = 56  F 2250' 14.3   |208  315 |
BLANDFORD   | 06:39-07:04|100% 35% 55%| 25 -  5 = 20 F=| 56 - 37 = 19  C 1100' 13.4   | 78  147 |
B.U.EAST    | 08:00-08:25|100% 30% 51%| 25 -  8 = 17  F| 56 - 39 = 17  C 1400' 17.0   |180  154 |
B.U.CENTRAL | 09:17-09:45|100% 30% 51%| 28 -  8 = 20 F-| 52 - 21 = 31 F-  750'  9.8   | 73  178 |
=============================================================================================
* = Best Time |  TOTALS :   --  --  --  276 - 83 =193   |783 -365 =418    13400'   --  |1021 2221
   Ever ...   |  AVERAGE: 100% 36% 55%   31 -  9 = 21  F| 98 - 46 = 52  F 1675' 11.7  |  11  278|
^ = Worst Time|  MAXIMUM: 100% 50% 65%   49   14   35   |197   75  141     2800' 17.0  |208Worst
   Ever .....|  MINIMUM: 100% 30% 51%   12    5    2   | 52   21   17      750'  6.9  |    Dwell
~~~~~~~~   MEAN DEVIATION:   LOADING   4% LOST DWELL   8sec|LOST LINK 29 sec          22%|Worst
      STANDARD DEVIATION:   LOADING   4% LOST DWELL   9sec|LOST LINK 38 sec          33%|Link 740
---------------------------------------------------------------------------------------------
               DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                 Feet      TIME        TIME     MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<     --       --    |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --     5:.52:.06 <<< :<<<    --     |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   6:.09:.17 17  :.11    8.8    |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES             -----------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ====================================
   THIS TRIP  THAN LOS .. E / C / B
========================================     Northbound at Boylston Street :
PARK    -   |                            |     LRV-1 full  5:36:00 in
BOYL  32%   |    THE         32% 35% 41% |     LRV-2 full 36:55 in
ARLI  15%   |    LINK        28% 35% 41% |     LRV-2 full 38:07
COPL  24%   |EFFICIENCIES 31% 39% 45% |     LRV-1 90% full  jammed at door  39:49 in
AUDI  35%   |    WOULD       35% 43% 50% |     @ Park Street  41:11 in  42:41 out  95% standees
KENM  28%   |     BE         31% 39% 45% |     @ Government Center  43:33 in
BLAN  36%   |    ....        36% 36% 42% |     ========================================
BU.E  38%   |                38% 38% 42% |     Government center platform Southbound :
BU.C  21%   |                27% 34% 39% |     Kenmore LRV-1 5:46:05 in  47:25 out
========================================     Boston College LRV-2  47:40 in  48:39 out  10% std
     26%    AVERAGE LINK 31% 37% 42%         @ Boylston 54:00 empty LRV-2 heading inbound
  GAIN IN RIDERS :                             @ Arlington/Copley 59:00 empty LRV-2 inbound
...Link Improvements only 19% 42% 62%
...Link & Dwell Improvements                   BC @ B.U.West  11:55 in  12:18 out  30% standees
                           28% 53% 79%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #37  SHK  Rider     AVER. TRIP SPEED =  10.3  LOS D
..WEDNESDAY, FEBRUARY 26, 1986  Typed by:   SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:50 P.M.        Checked by: SHK  MAY 7, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST  |
9   STATIONS|    TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |   LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL  |
=============================================================================================|
PARK STREET  | 50:20-51:28|100% 70% 79%| 68 - 14 = 54 F=| --   --   --     --    -- |131  -- |
BOYLSTON     | 52:12-52:37|100% 70% 79%| 25 - 10 = 15  D|  44 - 42 =  2  A 1500' 23.2|  88 202|
ARLINGTON    | 54:09-54:38|100% 70% 79%| 29 -  9 = 20  F|  92 - 56 = 36  D 2000' 14.8|  66 260|
COPLEY       | 55:35-56:20|100% 70% 79%| 45 - 11 = 34 F=|  57 - 44 = 13  B 1600' 19.1| 112 740|
AUDITORIUM   | 58:03-58:32|100% 20% 44%| 29 -  9 = 20  F| 103 - 75 = 28  B 2800' 18.5|  85 225|
KENMORE     6:00:14-00:47|100% 20% 44%| 33 -  9 = 24 F-| 102 - 51 = 51  F 2250' 15.0| 208 315|
BLANDFORD    | 01:46-02:16|100% 50% 65%| 30 -  5 = 25 F=|  59 - 37 = 22  C 1100' 12.7|  78 147|
B.U.EAST     | 03:33-03:58|100% 40% 58%| 25 -  8 = 17  F|  77 - 39 = 38  E 1400' 12.4| 180 154|
B.U.CENTRAL  | 04:56-05:26|100% 45% 62%| 30 -  8 = 22 F-|  58 - 21 = 37 F=  750'  8.8|  73 178|
==============================================================================================
* = Best Time |  TOTALS :  --  --  --  314 - 83 =231  |592 -365 =227   13400'  --  |1021 2221
    Ever ...  |  AVERAGE: 100% 51% 65%  35 -  9 = 26 F-| 74 - 46 = 28  D 1675' 15.4 |  11  278|
^ = Worst Time|  MAXIMUM: 100% 70% 79%  68    14   54  |103   75   51    2800' 23.2 | 208Worst|
    Ever .....|  MINIMUM: 100% 20% 44%  25     5   15  | 44   21    2     750'  8.8 |    Dwell|
--------   MEAN DEVIATION:  LOADING 14% LOST DWELL  9sec|LOST LINK 12 sec          20%|Worst
      STANDARD DEVIATION:  LOADING 14% LOST DWELL 11sec|LOST LINK 15 sec          34%|Link 740
---------------------------------------------------------------------------------------------
                DISTANCE   CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                  Feet      TIME       TIME    MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --    <:<<<:<<<     --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --    5:.50:.20 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   6:.04:.56  14 :.36   10.3  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
----------------------------------------------------| <<<<<<<<<<<> more               more  |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge   |        LEVEL OF SERVICE CRITERIA      |
LRV CAPACITY :  50 SEATS + 116 STANDEES            ------------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE     ========================================
    THIS TRIP  THAN LOS .. E / C / B
=======================================     Arrive @ northbound Boylston platform : 5:35
PARK   -   |                          |     LRV-1 full 41:20 in
BOYL  75%  |     THE      75% 75% 75% |     LRV-2 full 42:02 in
ARLI  48%  |    LINK      48% 53% 61% |     LRV-2 95% seats  no standees  42:24 in
COPL  61%  |EFFICIENCIES 61% 61% 61% |     @Park Street 43:35 in 43:50 doors closed 44:14 out
AUDI  58%  |    WOULD     58% 58% 58% |     @ Government Center  45:29
KENM  22%  |     BE       22% 29% 34% |     -----------------------------------------------
BLAN  28%  |    ....      28% 28% 34% |     Southbound Boston College LRV-2
BU.E  33%  |              33% 43% 50% |     @ Government Center  48:00 in  48:35 out 60% seats
BU.C  21%  |              31% 39% 45% |     @ B.U.West    07:25 in   07:48 out  50% standees
=======================================     Following LRV-2 08:06 in   08:12 out  no standees
      40%    AVERAGE LINK 41% 46% 51%
  GAIN IN RIDERS :
...Link Improvements only  2% 15% 27%
...Link & Dwell Improvements
                          17% 34% 52%
 B O S T O N  C O L L E G E   OUTBOUND #38  SHK  Rider    AVER. TRIP SPEED =   9.5  LOS E
....TUESDAY, MARCH 4, 1986      Typed by:    SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:05 P.M.        Checked by: SHK  MAY 7, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
  2.5 MILES  |   STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
 9  STATIONS|    TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK
LRV (two) BV|  IN    OUT  |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
=============================================================================================
PARK STREET  | 06:15-06:15|100% 75% 83%|  0 - 14 = NA NA| --   --   --      --     -- |131  --
BOYLSTON     | 07:30-07:30|100% 75% 83%|  0 - 10 = NA NA| 75 - 42 = 33  D 1500' 13.6 | 88  202
ARLINGTON    | 09:40-09:40|100% 75% 83%|  0 -  9 = NA NA|130 - 56 = 74 F- 2000' 10.5 | 66  260
COPLEY       | 11:52-12:17|100% 20% 44%| 25 - 11 = 14  D|132 - 44 = 88 F= 1600'  8.3 |112  740
AUDITORIUM   | 14:44-15:03|100% 15% 41%| 19 -  9 = 10  C|147 - 75 = 72  E 2800' 13.0 | 85  225
KENMORE      | 17:22-17:51|100% 10% 37%| 29 -  9 = 20  F|139 - 51 = 88 F= 2250' 11.0 |208  315
BLANDFORD    | 19:29-19:42|100% 10% 37%| 13 -  5 =  8  E| 98 - 37 = 61 F= 1100'  7.7 | 78  147
B.U.EAST     | 21:04-21:18|100% 15% 41%| 14 -  8 =  6  B| 82 - 39 = 43  F 1400' 11.6 |180  154
B.U.CENTRAL  | 22:04-22:18|100% 15% 41%| 14 -  8 =  6  B| 46 - 21 = 25  F  750' 11.1 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  114 - 83 = 64   |849 -365 =484   13400'    -- |1021 2221
    Ever ...  |  AVERAGE: 100% 34% 54%  13 -  9 =  7  B|106 - 46 = 61 F- 1675' 10.8 |  11  278
^ = Worst Time|  MAXIMUM: 100% 75% 83%  29    14    20 |147   75   88    2800' 13.6 |208Worst
    Ever .....|  MINIMUM: 100% 10% 37%   0     5    NA | 46   21   25     750'  7.7 |    Dwell
~~~~~~~~   MEAN DEVIATION:   LOADING 21% LOST DWELL NAsec|LOST LINK 20 sec           13%|Worst
       STANDARD DEVIATION:   LOADING 20% LOST DWELL NAsec|LOST LINK 23 sec           20%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 => A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --      --    |   DWELL  .4 - .8 => B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL  .8 -1.2 => C  <=  .4 - .6 LINK
Train Arrives      --     5:.06:.15 <<< :<<<    --     |   DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK
Transit Trip    13,400    5:.22:.04  15 :.49    9.5    |   DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 3.0  or  => F= <= 1.5  or  LINK
-------------------------------------------------------|<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ---------------------------------------
                                                     TRIP NOTES -- OTHER TRAINS AND COMMENTS
     LINK       SUPPOSE ALL LINK TIMES WERE          =====================================
  EFFICIENCY    IMPROVED SO NONE WERE WORSE       At Government Center southbound platform ...
  THIS TRIP     THAN LOS .. E / C / B             *Kenmore LRV-1  4:39:40 in  40:55 out
=======================================           *Kenmore LRV-1 42:57 in  44:00 out
PARK   -     |                           |        *Beacon LRV-2  48:21 in  48:58 out
BOYL  46%    |    THE       46% 55% 64%  |        *Riverside LRV-2 express lights out  51:40 thru
ARLI  36%    |   LINK       44% 55% 64%  |        *Riverside LRV-2 express  52:05 thru
COPL  28%    |EFFICIENCIES 44% 55% 64%  |        *Boston College LRV-2 express  53:25 thru
AUDI  22%    |   WOULD      22% 29% 34%  |        *Riverside LRV-2 55:37 in  56:58 out  100% full
KENM  15%    |    BE        22% 27% 32%  |        *Beacon LRV-2 57:15 through  express (bad wheel)
BLAN  14%    |   ....       19% 25% 28%  |        *Kenmore LRV-1  57:50 in 58:30 out
BU.E  18%    |              19% 25% 28%  |        *Boston College LRV-2 express  58:50 thru
BU.C  19%    |              22% 27% 32%  |        *Beacon LRV-2 59:42 in  00:21 out
=======================================           *Kenmore 00:47 in fully loaded. No announcements
     23%    AVERAGE LINK 28% 36% 42%              *Boston College LRV-2 02:40 in 04:05 out.
  GAIN IN RIDERS :                                       Express to Copley Square
...Link Improvements only 22% 57% 83%             @ B.U.West  24:32 in 24:50 out  15% standees
...Link & Dwell Improvements                       B.C. Train directly ahead. A third train arrived
                            18% 46% 69%                at 5:25:28 with only  a few standees.
                                                   Arrived home at 5:41 PM
```

```
 B O S T O N   C O L L E G E   OUTBOUND #39  SHK  Rider      AVER. TRIP SPEED =   7.8  LOS F-
.... FRIDAY, MARCH 14, 1986      Typed by:   SHK  MAR.12, 89  Previous Worst =    4.8  LOS F=
 ..Begin Trip  6:00 P.M.        Checked by: SHK  MAY 7, 89   Previous Best  =   17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST
9   STATIONS |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED   |    LINK
LRV (two) BV |  IN   OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH   |DWELL
==============================================================================================
PARK STREET  | 00:47-02:23|100% 75% 83%| 96 - 14 = 82 F=| --   --   --    --       --  |131   --
BOYLSTON     | 03:36-04:18|100% 80% 86%| 42 - 10 = 32 F=| 73 - 42 = 31  D 1500' 14.0  | 88  202
ARLINGTON    | 06:50-07:37|100% 80% 86%| 47 -  9 = 38 F=|152 - 56 = 96 F= 2000'  9.0  | 66  260
COPLEY       | 09:14-09:58|100% 50% 65%| 44 - 11 = 33 F=| 97 - 44 = 53 F- 1600' 11.2  |112  740
AUDITORIUM   | 12:24-12:52|100% 35% 55%| 28 -  9 = 19  F|146 - 75 = 71  E 2800' 13.1  | 85  225
KENMORE      | 15:05-15:29|100% 30% 51%| 24 -  9 = 15  E|133 - 51 = 82 F= 2250' 11.5  |208  315
BLANDFORD    | 16:35-17:16|100% 30% 51%| 41 -  5 = 36 F=| 66 - 37 = 29  D 1100' 11.4  | 78  147
B.U.EAST     | 18:45-19:02|100% 30% 51%| 17 -  8 =  9  C| 89 - 39 = 50 F- 1400' 10.7  |180  154
B.U.CENTRAL  | 20:00-20:28|100% 30% 51%| 28 -  8 = 20 F-| 58 - 21 = 37 F=  750'  8.8  | 73  178|
==============================================================================================
* = Best Time  |  TOTALS :  --  --  --  367 - 83 =284  |814 -365 =449   13400'   --  |1021 2221
    Ever ...   |  AVERAGE: 100% 49% 64%  41 -  9 = 32 F=|102 - 46 = 56 F- 1675' 11.2  | 11  278|
^ = Worst Time |  MAXIMUM: 100% 80% 86%  96   14   82   |152   75   96    2800' 14.0  |208Worst
    Ever .....|  MINIMUM: 100% 30% 51%  17    5    9   | 58   21   29     750'  8.8  |    Dwell
~~~~~~~~   MEAN DEVIATION:   LOADING 16% LOST DWELL 16sec|LOST LINK 20 sec        10% |Worst
     STANDARD DEVIATION:   LOADING 15% LOST DWELL 20sec|LOST LINK 23 sec        17% |Link 740
----------------------------------------------------------------------------------------------
                 DISTANCE  CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet     TIME       TIME     MPH   |   DWELL  .0 - .4 => A  <=  .0 - .2 LINK
Leave Door ...     --    <:<<<:<<<     --       --    |   DWELL  .4 - .8 => B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL  .8 -1.2 => C  <=  .4 - .6 LINK
Train Arrives     --     6:.00:.47 <<< :<<<    --     |   DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK
Transit Trip    13,400   6:.20:.00  19 :.13    7.8    |   DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 3.0  or  => F= <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more            more     |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES               -------------------------------------------

    LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY IMPROVED SO NONE WERE WORSE      =======================================
  THIS TRIP  THAN LOS .. E / C / B         Arrive at Government Center   5:28:28
=======================================    Kenmore LRV-1 30:42 in 32:20 out signed "Lechmere"
PARK    -   |                          |    Boston College LRV-2 32:32 in  33:55 out  jammed
BOYL  48%   |    THE      48% 55% 64% |    Cleveland Circle LRV-2 34:21 in 35:25 out
ARLI  32%   |   LINK      45% 57% 66% |    Riverside LRV-2 35:47 in    36:34 out
COPL  39%   |EFFICIENCIES 45% 57% 66% |    Cleveland Circle 36:42 in   37:44 out
AUDI  33%   |   WOULD     33% 43% 50% |    Beacon LRV-2 38:08/38:40 2 people on second unit
KENM  21%   |    BE       29% 37% 42% |    Riverside LRV-2 39:00/39:37
BLAN  29%   |   ....      29% 34% 39% |    Kenmore LRV-1 40:00/41:05 not full  delay leaving
BU.E  22%   |             27% 34% 39% |    Cleveland Circle LRV-2s 42:30/43:18  48:22/49:32
BU.C  18%   |             27% 34% 39% |    Beacon LRV-1  53:52  55:18
=======================================    Riverside LRV-2  55:50 56:40
     29%     AVERAGE LINK 34% 43% 49%      Boston College LRV-2  57:08/58:13  72% seated
  GAIN IN RIDERS :                          Boston College LRV right behind
...Link Improvements only 17% 48% 69%      @ B.U.West  22:25 in  22:55 out  30% standing
...Link & Dwell Improvements                Next LRV following in at 24:50
                          35% 68% 97%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #40  SHK  Rider     AVER. TRIP SPEED =   9.2  LOS E
.... _MONDAY, APRIL 7, 1986     Typed by:   SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:25 P.M.       Checked by: SHK  MAY 7, 89   Previous Best  =  16.8  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS  |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV  | IN     OUT|SEATS   TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
==============================================================================================
PARK STREET   | 26:18-27:29|100% 75% 83%|  71 - 14 = 57 F=| --   --    --     --    -- |131   --
BOYLSTON      | 28:17-28:45|100% 80% 86%|  28 - 10 = 18  E|  48 - 42 =  6  A 1500' 21.3 | 88  202
ARLINGTON     | 30:31-31:24|100% 80% 86%|  53 -  9 = 44 F=|106 - 56 = 50  E 2000' 12.9 | 66  260
COPLEY        | 33:14-34:17|100% 90% 93%|  63 - 11 = 52 F=|110 - 44 = 66 F= 1600'  9.9 |112  740
AUDITORIUM    | 35:49-36:23|100% 90% 93%|  34 -  9 = 25 F-|  92 - 75 = 17  B 2800' 20.8 | 85  225
KENMORE       | 37:50-38:51|100% 90% 93%|  61 -  9 = 52 F=|  87 - 51 = 36  D 2250' 17.6 |208  315
BLANDFORD     | 39:44-40:27|100% 90% 93%|  43 -  5 = 38 F=|  53 - 37 = 16  C 1100' 14.2 | 78  147
B.U.EAST      | 41:18-42:04|100% 90% 93%|  46 -  8 = 38 F=|  51 - 39 = 12  B 1400' 18.7 |180  154
B.U.CENTRAL   | 42:36-43:16|100% 90% 93%|  40 -  8 = 32 F=|  32 - 21 = 11  C  750' 16.0 | 73  178
==============================================================================================
* = Best Time |  TOTALS :  --  --  --  439 - 83 =356  |579 -365 =214   13400'    -- |1021 2221
    Ever ...  |  AVERAGE: 100% 86% 90%  49 -  9 = 40 F=| 72 - 46 = 27  C 1675' 15.8  | 11  278
^ = Worst Time|  MAXIMUM: 100% 90% 93%  71   14   57   |110   75   66    2800' 21.3  |208Worst
    Ever .....|  MINIMUM: 100% 75% 83%  28    5   18   | 32   21    6     750'  9.9  |   Dwell
--------  MEAN DEVIATION:  LOADING  4% LOST DWELL 12sec|LOST LINK 18 sec          18%|Worst
     STANDARD DEVIATION:  LOADING  4% LOST DWELL 12sec|LOST LINK 20 sec          27%|Link 740
----------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --    <:<<<:<<<      --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --    5:.26:.18 <<< :<<<      --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400   5:.42:.36  16 :.18      9.2  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0   or  => F=  <= 1.5   or LINK
-------------------------------------------------------| <<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                ----------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      =======================================
   THIS TRIP   THAN LOS .. E / C / B
=======================================   Northbound @ Boylston : LRV-2 full  5:11:02 out
PARK     -   |                         |   LRV-1 11:25 in  11:50 out  jammed 2 people get on
BOYL  73%    |    THE        73% 73% 73% |   LRV-2  12:59 out  full
ARLI  45%    |    LINK       45% 57% 66% |   LRV-2 14:04 out  second car 2/3 full
COPL  34%    |EFFICIENCIES  45% 57% 66% |   LRV-2 14:25 in  14:47 out  Park 15:43/17:09
AUDI  76%    |   WOULD       76% 76% 76% |         Governmnet Center  18:16 in
KENM  55%    |    BE         55% 62% 72% |   5:22 Speaker: "All service is running on schedule"
BLAN  65%    |   ....        65% 65% 72% |   Southbound platform at Government Center :
BU.E  71%    |               71% 71% 71% |   Kenmore LRV-1 20:00 in  21:33 out
BU.C  61%    |               61% 61% 72% |   Riverside LRV-2  21:45 in  23:07 out
=======================================   Boston College LRV-2 23:28 in  24:16 out 75% stand
     57%    AVERAGE LINK 59% 65% 71%       @ B.U.West 44:55 in 45:30 out  95% standees
  GAIN IN RIDERS :                           (some people unable to board, left on platform)
...Link Improvements only  4% 14% 25%      Next train LRV-2  48:35 in  48:55 out
...Link & Dwell Improvements               Arrive home at  6:08
                           33% 51% 70%
 B O S T O N   C O L L E G E   OUTBOUND #41  SHK  Rider     AVER. TRIP SPEED =   8.4  LOS F
.... FRIDAY, APRIL 11, 1986     Typed by:    SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:10 P.M.       Checked by: SHK  MAY 7, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
==========================================================================================
PARK STREET | 10:42-11:46|100% 75% 83%| 64 - 14 = 50 F=| --   --   --      --    --  |131   --
BOYLSTON    | 12:34-13:12|100% 80% 86%| 38 - 10 = 28 F-| 48 - 42 =  6  A 1500' 21.3 | 88   202
ARLINGTON   | 14:50-15:52|100% 95% 97%| 62 -  9 = 53 F=| 98 - 56 = 42  D 2000' 13.9 | 66   260
COPLEY      | 16:50-18:00|100% 90% 93%| 70 - 11 = 59 F=| 58 - 44 = 14  B 1600' 18.8 |112   740
AUDITORIUM  | 19:35-20:08|100% 60% 72%| 33 -  9 = 24 F-| 95 - 75 = 20  B 2800' 20.1 | 85   225
KENMORE     | 21:41-25:09|100% 30% 51%|208^-  9 =199^F=| 93 - 51 = 42  E 2250' 16.5 |208   315
BLANDFORD   | 26:02-26:33|100% 30% 51%| 31 -  5 = 26 F=| 53 - 37 = 16  C 1100' 14.2 | 78   147
B.U.EAST    | 27:28-28:05|100% 30% 51%| 37 -  8 = 29 F=| 55 - 39 = 16  C 1400' 17.4 |180   154
B.U.CENTRAL | 28:36-29:05|100% 30% 51%| 29 -  8 = 21 F-| 31 - 21 = 10  C  750' 16.5 | 73   178
==========================================================================================
* = Best Time |  TOTALS :  --  --  --  572 - 83 =489    |531 -365 =166   13400'   --  |1021 2221
    Ever ...  |  AVERAGE: 100% 58% 71%  64 -  9 = 54 F=| 66 - 46 = 21  C 1675' 17.2  | 11  278|
^ = Worst Time|  MAXIMUM: 100% 95% 97% 208    14   199  | 98   75   42    2800' 21.3  |208Worst
    Ever .....|  MINIMUM: 100% 30% 51%  29     5    21  | 31   21    6     750' 13.9  |   Dwell
--------    MEAN DEVIATION:   LOADING 20% LOST DWELL 37sec|LOST LINK 11 sec         11%|Worst
      STANDARD DEVIATION:   LOADING 19% LOST DWELL 53sec|LOST LINK 13 sec         17%|Link 740
------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --     5:.10:.42 <<< :<<<    --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   5:.28:.36  17 :.54    8.4   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------|<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |     LEVEL OF SERVICE CRITERIA   |
LRV CAPACITY :  50 SEATS + 116 STANDEES                ------------------------------------------
```

```
        LINK    SUPPOSE ALL LINK TIMES WERE
    EFFICIENCY IMPROVED SO NONE WERE WORSE
    THIS TRIP  THAN LOS .. E / C / B
=========================================
PARK     -  |                            |
BOYL  73%  |    THE       73% 73% 73%  |
ARLI  49%  |    LINK      49% 57% 66%  |
COPL  74%  |EFFICIENCIES 74% 74% 74%  |
AUDI  73%  |    WOULD     73% 73% 73%  |
KENM  39%  |     BE       39% 48% 55%  |
BLAN  36%  |    ....      36% 36% 39%  |
BU.E  36%  |              36% 36% 39%  |
BU.C  35%  |              35% 35% 39%  |
=========================================
      49%    AVERAGE LINK 49% 52% 56%
  GAIN IN RIDERS :
...Link Improvements only  0%   6% 14%
...Link & Dwell Improvements
                          49% 65% 84%
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
==

Arrived at Government Center Platform : 4:55:20
Riverside LRV-2 55:40 in stop for 2 sec.
   doors do not open no announcement
Cleveland Circle LRV-2 56:43 out
Riverside 56:57 in 57:25 out
Riverside LRV-2 57:48 in 58:24 out
   5:02 no smoking announcement
Kenmore LRV-1 04:23 in 06:20 out long delay
Boston College LRV-2 06:14 in 07:40 out 25% stand
   "Express to Packer's Corner"
@ Kenmore Kenmore 23:27 in 24:00 out empty
Boston College train @ Kenmore: 24:33 in 25:09 out
@ B.U.West 30:50 in 31:19 out 30% standees
NOTE : long dwell at Kenmore was caused by making the train an Express. Local riders had to get off at Kenmore and wait for the next train.

```
 B O S T O N  C O L L E G E  OUTBOUND #42  SHK  Rider    AVER. TRIP SPEED =  11.7  LOS C
...THURSDAY, AUGUST 14, 1986   Typed by:   SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:45 P.M.       Checked by: SHK  MAY 7, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|   TIME     |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |   LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH    |DWELL
=============================================================================================
PARK STREET  | 44:53-45:35|100% 20% 44%| 42 - 14 = 28  F|  --   --   --     --    --  |131   --
BOYLSTON     | 46:25-46:45|100% 23% 46%| 20 - 10 = 10  C| 50 - 42 =  8  A 1500' 20.5  | 88   202
ARLINGTON    | 48:14-48:39|100% 16% 41%| 25 -  9 = 16  E| 89 - 56 = 33  C 2000' 15.3  | 66   260
COPLEY       | 49:50-50:49|100%  8% 36%| 59 - 11 = 48 F=| 71 - 44 = 27  D 1600' 15.4  |112   740
AUDITORIUM   | 52:20-52:47|100%  8% 36%| 27 -  9 = 18  F| 91 - 75 = 16  B 2800' 21.0  | 85   225
KENMORE      | 54:26-54:55|100%  7% 35%| 29 -  9 = 20  F| 99 - 51 = 48  E 2250' 15.5  |208   315
BLANDFORD    | 55:35-56:05|100%  7% 35%| 30 -  5 = 25 F=| 40 - 37 =  3  A 1100' 18.8  | 78   147
B.U.EAST     | 56:56-57:13|100%  5% 34%| 17 -  8 =  9  C| 51 - 39 = 12  B 1400' 18.7  |180   154
B.U.CENTRAL  | 57:49-58:23|100%  8% 36%| 34 -  8 = 26 F=| 36 - 21 = 15  D  750' 14.2  | 73   178
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  283 - 83 =200   |527 -365 =162   13400'   --  |1021 222
   Ever ...   |  AVERAGE: 100% 11% 38%  31 -  9 = 22 F-| 66 - 46 = 20  C 1675' 17.3  | 11  278
^ = Worst Time|  MAXIMUM: 100% 23% 46%  59   14   48   | 99   75   48    2800' 21.0  |208Worst
   Ever .....|  MINIMUM: 100%  5% 34%  17    5    9   | 36   21    3     750' 14.2  |   Dwell
~~~~~~~~~ MEAN DEVIATION:   LOADING  4% LOST DWELL 10sec|LOST LINK 12 sec          12%|Worst
     STANDARD DEVIATION:   LOADING  4% LOST DWELL 11sec|LOST LINK 14 sec          16%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME    MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<     --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform   2,500    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     5:.44:.53 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400    5:.57:.49  12 :.56   11.7  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------|<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ----------------------------------------

    LINK      SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE     =======================================
 THIS TRIP    THAN LOS .. E / C / B
=======================================     Boston Coll @ Gov.Ctr 42:26 in 43:08 out 8 stand
PARK    -   |                            |    @ B.U.West  59:13 in  59:33 out  5 stand
BOYL  37%   |     THE       37% 37% 37%  |
ARLI  29%   |    LINK       29% 29% 35%  |
COPL  25%   | EFFICIENCIES  25% 27% 32%  |
AUDI  30%   |    WOULD      30% 30% 30%  |
KENM  19%   |     BE        19% 24% 28%  |
BLAN  32%   |    ....       32% 32% 32%  |
BU.E  27%   |               27% 27% 27%  |
BU.C  20%   |               20% 23% 26%  |
=======================================
     26%    AVERAGE LINK 26% 28% 30%
  GAIN IN RIDERS :
...Link Improvements only  0%  8% 15%
...Link & Dwell Improvements
                          12% 23% 38%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #43  SHK  Rider     AVER. TRIP SPEED =  13.1  LOS B
.... MONDAY, AUGUST 18, 1986     Typed by:    SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  1:00 P.M.         Checked by: SHK  MAY 7, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST  |
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK|
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL   |
=============================================================================================
PARK STREET  | 02:41-02:59| 28%  0%  8%| 18 - 14 =  4  A| --   --   --     --     --  |131  -- |
BOYLSTON     | 04:00-04:15| 24%  0%  7%| 15 - 10 =  5  B| 61 - 42 = 19  C 1500' 16.8 | 88  202|
ARLINGTON    | 06:04-06:16| 28%  0%  8%| 12 -  9 =  3  A|109 - 56 = 53  E 2000' 12.5 | 66  260|
COPLEY       | 07:44-07:57| 40%  0% 12%| 13 - 11 =  2  A| 88 - 44 = 44  F 1600' 12.4 |112  740|
AUDITORIUM   |.09:51-10:00| 36%  0% 11%|  9*-  9 =  0* A|114 - 75 = 39  C 2800' 16.7 | 85  225|
KENMORE      | 11:25-11:39| 36%  0% 11%| 14 -  9 =  5  B| 85 - 51 = 34  D 2250' 18.0 |208  315|
BLANDFORD    | 12:30-12:39| 40%  0% 12%|  9 -  5 =  4  C| 51 - 37 = 14  B 1100' 14.7 | 78  147|
B.U.EAST     | 13:24-13:33| 40%  0% 12%|  9 -  8 =  1  A| 45 - 39 =  6  A 1400' 21.2 |180  154|
B.U.CENTRAL  | 14:11-14:29| 40%  0% 12%| 18 -  8 = 10  D| 38 - 21 = 17  E  750' 13.5 | 73  178|
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  117 - 83 = 34   |591 -365 =226   13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  35%  0%  10%  13 -  9 =  4  B | 74 - 46 = 28  D 1675' 15.5 | 11  278|
^ = Worst Time|  MAXIMUM:  40%  0%  12%  18    14    10   |114   75   53     2800' 21.2 |208Worst|
    Ever .....|  MINIMUM:  24%  0%   7%   9     5     0   | 38   21    6      750' 12.4 |   Dwell|
--------   MEAN DEVIATION:  LOADING   2% LOST DWELL   2sec|LOST LINK 14 sec         14%|Worst   |
       STANDARD DEVIATION:  LOADING   2% LOST DWELL   3sec|LOST LINK 15 sec         23%|Link 740|
---------------------------------------------------------------------------------------------|
                  DISTANCE   CLOCK       ELAPSED   SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST|
                    Feet      TIME        TIME      MPH   |   DWELL  .0 - .4 => A  <=  .0 - .2 LINK|
Leave Door ...      --     <:<<<:<<<       --        --   |   DWELL  .4 - .8 => B  <=  .2 - .4 LINK|
Arrive Platform   2,500   <:<<<:<<< <<< :<<<    <<<<<  |   DWELL  .8 -1.2 => C  <=  .4 - .6 LINK|
Train Arrives       --     1:.02:.41 <<< :<<<      --    |   DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK|
Transit Trip      13,400   1:.14:.11  11 :.30     13.1   |   DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK|
Arrive Door ...    3,800   <:<<<:<<< <<< :<<<    <<<<<  |   DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK|
Total Trip ...    19,700   <:<<<:<<< <<< :<<<    <<<<<  |   DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK|
Straight Line     12,500   <:<<<:<<< <<< :<<<    <<<<<  |   DWELL 3.0  or  => F= <= 1.5  or  LINK|
----------------------------------------------------------|<<<<<<<<<<<<> more               more  |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge          |      LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES                   ------------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE       TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE       ========================================
  THIS TRIP  THAN LOS .. E / C / B
=====================================       Boston College @ Government Center :
PARK    -   |                        |         1:00:12 in  00:32 out  5 seat
BOYL    6%  |    THE        6%  6%  6%|       @ B.U.West  15:57 in  16:14 out
ARLI    4%  |    LINK       4%  5%  5%|
COPL    4%  |EFFICIENCIES   4%  5%  6%|
AUDI    8%  |   WOULD       8%  8%  9%|
KENM    7%  |    BE         7%  7%  8%|
BLAN    8%  |   ....        8%  8%  8%|
BU.E   10%  |              10% 10% 10%|
BU.C    7%  |               7%  8%  9%|
=====================================
       6%    AVERAGE LINK  6%  7%  8%
  GAIN IN RIDERS :
...Link Improvements only  0% 17% 33%
...Link & Dwell Improvements
                           6% 16% 29%
 B O S T O N   C O L L E G E   OUTBOUND #44  SHK  Rider     AVER. TRIP SPEED =   8.7  LOS F
 WEDNESDAY, SEPTEMBER 10, 1986  Typed by:    SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:30 P.M.        Checked by: SHK  MAY 7, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS    MPH   |DWELL
=============================================================================================
PARK STREET | 31:34-32:52|100% 60% 72%| 78 - 14 = 64 F=| --   --   --    --     --  |131   --
BOYLSTON    | 34:23-34:50|100% 60% 72%| 27 - 10 = 17  E| 91 - 42 = 49  F 1500' 11.2 | 88  202
ARLINGTON   | 36:36-37:10|100% 60% 72%| 34 -  9 = 25 F-|106 - 56 = 50  E 2000' 12.9 | 66  260
COPLEY      | 38:01-38:59|100% 40% 58%| 58 - 11 = 47 F=| 51 - 44 =  7  A 1600' 21.4 |112  740
AUDITORIUM  | 40:29-41:03|100% 40% 58%| 34 -  9 = 25 F-| 90 - 75 = 15  B 2800' 21.2 | 85  225
KENMORE     | 42:29-44:49|100%  9% 36%|140 -  9 =131 F=| 86 - 51 = 35  D 2250' 17.8 |208  315
BLANDFORD   | 45:36-45:52|100%  9% 36%| 16 -  5 = 11  F| 47 - 37 = 10  B 1100' 16.0 | 78  147
B.U.EAST    | 46:47-48:24|100%  8% 36%| 97 -  8 = 89 F=| 55 - 39 = 16  C 1400' 17.4 |180  154
B.U.CENTRAL | 48:58-49:25|100% 13% 39%| 27 -  8 = 19  F| 34 - 21 = 13  D  750' 15.0 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  511 - 83 =428   |560 -365 =195   13400'   -- |1021 2221
    Ever ...  |  AVERAGE: 100% 33% 53%  57 -  9 = 48 F=| 70 - 46 = 24  C 1675' 16.3 | 11  278
^ = Worst Time|  MAXIMUM: 100% 60% 72% 140   14  131   |106   75   50     2800' 21.4 |208Worst
    Ever .....|  MINIMUM: 100%  8% 36%  16    5   11   | 34   21    7      750' 11.2 |   Dwell
~~~~~~~~    MEAN DEVIATION:  LOADING 17% LOST DWELL 36sec|LOST LINK 15 sec          15%|Worst
        STANDARD DEVIATION:  LOADING 16% LOST DWELL 38sec|LOST LINK 16 sec          24%|Link 740
---------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet      TIME       TIME     MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<       --      --    |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<    |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     5:.31:.34 <<< :<<<     --     |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    5:.48:.58  17 :.24    8.7     |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<    |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<    |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<    |  DWELL 3.0   or => F=  <= 1.5  or  LINK
--------------------------------------------------------|<<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                  -----------------------------------

     LINK     SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE       =======================================
  THIS TRIP   THAN LOS .. E / C / B
=======================================     Boston College at Government Center :
PARK    -    |                        |        5:29:11 out 40% seated  LRV-2
BOYL  33%    |   THE       38% 48% 55%|     @ B.U.West  50:11 in  50:33 out  15% stand
ARLI  38%    |   LINK      38% 48% 55%|
COPL  62%    |EFFICIENCIES 62% 62% 62%|     At the B.U. East stop, the driver
AUDI  48%    |   WOULD     48% 48% 48%|        got out to check the train.
KENM  34%    |    BE       34% 39% 45%|
BLAN  28%    |   ....      28% 28% 28%|
BU.E  26%    |             26% 26% 28%|
BU.C  22%    |             22% 24% 28%|
=======================================
     35%    AVERAGE LINK 35% 39% 42%
  GAIN IN RIDERS :
...Link Improvements only  0% 11% 20%
...Link & Dwell Improvements
                          43% 63% 83%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #45  SHK  Rider     AVER. TRIP SPEED =  7.7  LOS F-
.WEDNESDAY, SEPTEMBER 17,1986   Typed by:   SHK  MAR.12, 89  Previous Worst =  4.8  LOS F=
 ..Begin Trip  5:20 P.M.        Checked by: SHK  MAY 7, 89   Previous Best  = 17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS  |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV  |  IN   OUT |SEATS  TOTAL |sec. TIME TIME S|sec. TIME TIME LOS    MPH    |DWELL
==============================================================================================
PARK STREET   | 21:21-22:16|100% 40% 58%| 55 - 14 = 41 F-|  --   --   --      --    --  |131  --
BOYLSTON      | 23:42-23:54|100% 40% 58%| 12 - 10 =  2  A| 86 - 42 = 44  F 1500' 11.9  | 88  202
ARLINGTON     | 26:56-27:17|100% 20% 44%| 21 -  9 = 12  D|182 - 56 =126 F= 2000'  7.5  | 66  260
COPLEY        | 30:08-30:36|100% 13% 39%| 28 - 11 = 17  D|171 - 44 =127 F= 1600'  6.4  |112  740
AUDITORIUM    | 32:55-33:12|100% 13% 39%| 17 -  9 =  8  C|139 - 75 = 64  E 2800' 13.7  | 85  225
KENMORE       | 35:23-35:44|100%  5% 34%| 21 -  9 = 12  D|131 - 51 = 80 F= 2250' 11.7  |208  315
BLANDFORD     | 36:28-37:20|100% 13% 39%| 52 -  5 = 47 F=| 44 - 37 =  7  A 1100' 17.0  | 78  147
B.U.EAST      | 38:20-38:50|100%  7% 35%| 30 -  8 = 22 F-| 60 - 39 = 21  C 1400' 15.9  |180  154
B.U.CENTRAL   | 40:56-41:20|100% 21% 45%| 24 -  8 = 16  F|126 - 21 =105 F=  750'  4.1  | 73  178
==============================================================================================
* = Best Time  |  TOTALS :   --  --  --  260 - 83 =177  |939 -365 =574   13400'    --  |1021 2221
    Ever ...   |  AVERAGE: 100% 19% 43%  29 -  9 = 20  F|117 - 46 = 72 F= 1675'  9.7  | 11  278
^ = Worst Time |  MAXIMUM: 100% 40% 58%  55   14   47   |182   75  127      2800' 17.0  |208Worst
    Ever ..... |  MINIMUM: 100%  5% 34%  12    5    2   | 44   21    7       750'  4.1  |   Dwell
~~~~~~~~     MEAN DEVIATION:  LOADING  8% LOST DWELL 13sec|LOST LINK 38 sec        38%  |Worst
         STANDARD DEVIATION:  LOADING  8% LOST DWELL 14sec|LOST LINK 43 sec        52%  |Link 740
----------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME       TIME    MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --    <:<<<:<<<     --      --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform   2,500   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --    5:.21:.21 <<< :<<<    --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400   5:.40:.56  19 :.35    7.7   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line.   12,500   <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------| <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES               ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

     LINK     SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE       =======================================
   THIS TRIP  THAN LOS .. E / C / B          AT GOVERNMENT CENTER Southbound :
==========================================     Brigham Circle  LRV-1  16:30 out
PARK     -   |                            |    Beacon LRV-2  16:47 in  17:17 out  no standees
BOYL   28%   |    THE        31% 39% 45%  |    Riverside LRV-2 17:37 in  18:05 out 5 seated
ARLI   18%   |    LINK       31% 39% 45%  |    Boston College LRV-2  18:21 in 19:28 out  24% seat
COPL   11%   |EFFICIENCIES   23% 29% 34%  |    @ B.U.West  43:05 in  43:25 out 25% stand
AUDI   21%   |    WOULD      21% 26% 30%  |       LRV-2 immediately in front.
KENM   15%   |     BE        21% 26% 30%  |
BLAN   29%   |    ....       29% 29% 29%  |
BU.E   25%   |               25% 25% 30%  |
BU.C    6%   |               18% 23% 27%  |
==========================================
     17%    AVERAGE LINK 24% 29% 33%
  GAIN IN RIDERS :
...Link Improvements only 41% 71% 94%
...Link & Dwell Improvements
                          46% 74% <<<
```

```
 B O S T O N  C O L L E G E  OUTBOUND #46  SHK  Rider     AVER. TRIP SPEED =  12.8  LOS C
....TUESDAY, OCTOBER 13, 1986   Typed by:   SHK  MAR.16, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  2:10 P.M.        Checked by: SHK  MAY 20, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9  STATIONS |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |   LINK
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS    MPH   |DWELL
==============================================================================================
PARK STREET | 09:47-10:25|100%  7% 35%| 38 - 14 = 24  E| --    --   --     --    -- |131   --
BOYLSTON    | 11:11-11:24|100%  7% 35%| 13 - 10 =  3  A| 46 - 42 =  4  A 1500' 22.2 | 88  202
ARLINGTON   | 12:43-13:02|100%  7% 35%| 19 -  9 = 10  C| 79 - 56 = 23  C 2000' 17.3 | 66  260
COPLEY      | 13:54-14:14| 96%  0% 29%| 20 - 11 =  9  C| 52 - 44 =  8  A 1600' 21.0 |112  740
AUDITORIUM  | 16:14-16:28| 96%  0% 29%| 14 -  9 =  5  B|120 - 75 = 45  D 2800' 15.9 | 85  225
KENMORE   . | 18:29-18:45| 60%  0% 18%| 16 -  9 =  7  B|121 - 51 = 70 F- 2250' 12.7 |208  315
BLANDFORD   | 19:24-19:43| 56%  0% 17%| 19 -  5 = 14 F-| 39 - 37 =  2  A 1100' 19.2 | 78  147
B.U.EAST    | 20:47-21:04| 92%  0% 28%| 17 -  8 =  9  C| 64 - 39 = 25  D 1400' 14.9 |180  154
B.U.CENTRAL | 21:38-22:01|100%  0% 30%| 23 -  8 = 15  E| 34 - 21 = 13  D  750' 15.0 | 73  178
==============================================================================================
* = Best Time |  TOTALS :   --  --  --  179 - 83 = 96   |555 -365 =190   13400'   -- |1021 2221
   Ever ...   |  AVERAGE:  89%  2% 28%   20 -  9 = 11  C| 69 - 46 = 24  C 1675' 16.5 |  11  278
^ = Worst Time|  MAXIMUM: 100%  7% 35%   38   14   24   |121   75   70    2800' 22.2 |208Worst
   Ever .....|  MINIMUM:  56%  0% 17%   13    5    3   | 34   21    2     750' 12.7 |   Dwell
~~~~~~~~~  MEAN DEVIATION:  LOADING  6% LOST DWELL  5sec|LOST LINK 17 sec         14%|Worst
     STANDARD DEVIATION:  LOADING  6% LOST DWELL  6sec|LOST LINK 22 sec         23%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --    <:<<<:<<<      --       --  |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --    2:.09:.47 <<< :<<<     --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    2:.21:.38  11 :.51    12.8  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
----------------------------------------------------- | <<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ------------------------------------------

    . LINK     SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY  IMPROVED SO NONE WERE WORSE      ========================================
   THIS TRIP   THAN LOS .. E / C / B
======================================     Government Center: 2:07:52 in 08:12 out  8 seated
PARK    -    |                         |      7
BOYL  32%    |    THE        32% 32% 32%|
ARLI  25%    |    LINK       25% 25% 27%|
COPL  30%    |EFFICIENCIES   30% 30% 30%|
AUDI  18%    |   WOULD       18% 19% 22%|
KENM  12%    |    BE         15% 19% 22%|
BLAN  17%    |   ....        17% 17% 17%|
BU.E  10%    |               10% 11% 13%|
BU.C  17%    |               17% 19% 22%|
======================================
    18%     AVERAGE LINK 19% 21% 23%
  GAIN IN RIDERS :
...Link Improvements only  6% 17% 28%
...Link & Dwell Improvements
                           8% 16% 27%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #47  SHK  Rider     AVER. TRIP SPEED =   7.6  LOS F-
.WEDNESDAY, NOVEMBER 26, 1986   Typed by:   SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:15 P.M.       Checked by: SHK  MAY 8, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989=================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9   STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |   LINK |
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=============================================================================================|
PARK STREET | 16:42-17:59|100% 90% 93%| 77 - 14 = 63 F=| --   --   --    --     -- |131  -- |
BOYLSTON    | 18:49-19:09|100% 90% 93%| 20 - 10 = 10  C| 50 - 42 =  8  A 1500' 20.5 | 88  202|
ARLINGTON   | 21:53-22:37|100% 85% 90%| 44 -  9 = 35 F=|164 - 56 =108 F= 2000'  8.3 | 66  260|
COPLEY      | 24:22-25:06|100% 85% 90%| 44 - 11 = 33 F=|105 - 44 = 61 F- 1600' 10.4 |112  740|
AUDITORIUM  | 27:49-28:30|100% 85% 90%| 41 -  9 = 32 F=|163 - 75 = 88  F 2800' 11.7 | 85  225|
KENMORE     | 30:04-30:52|100% 85% 90%| 48 -  9 = 39 F=| 94 - 51 = 43  E 2250' 16.3 |208  315|
BLANDFORD   | 31:38-32:00|100% 85% 90%| 22 -  5 = 17 F=| 46 - 37 =  9  B 1100' 16.3 | 78  147|
B.U.EAST    | 33:09-33:37|100% 85% 90%| 28 -  8 = 20 F-| 69 - 39 = 30  D 1400' 13.8 |180  154|
B.U.CENTRAL | 36:30-37:00|100% 85% 90%| 30 -  8 = 22 F-|173 - 21 =152 F=  750'  3.0 | 73  178|
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  354 - 83 =271   |864 -365 =499   13400'   --  |1021 2221
    Ever ...  |  AVERAGE: 100% 86% 91%  39 -  9 = 30 F=|108 - 46 = 62 F- 1675' 10.6  | 11  278|
^ = Worst Time|  MAXIMUM: 100% 90% 93%  77    14    63 |173   75  152     2800' 20.5  |208Worst
    Ever .....|  MINIMUM: 100% 85% 90%  20     5    10 | 46   21    8      750'  3.0  |   Dwell
--------   MEAN DEVIATION:  LOADING  1% LOST DWELL 13sec|LOST LINK 40 sec         37%|Worst
       STANDARD DEVIATION:  LOADING  1% LOST DWELL 15sec|LOST LINK 47 sec         62%|Link 740
---------------------------------------------------------------------------------------------
              DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...   --    <:<<<:<<<      --      --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500  <:<<<:<<< <<< :<<<  <<<<<    |   DWELL  .8 -1.2 =>  C  <= ..4 - .6 LINK
Train Arrives    --    5:.16:.42 <<< :<<<   --      |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400  5:.36:.30  19 :.48   7.6     |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ... 3,800  <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ... 19,700  <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line  12,500  <:<<<:<<< <<< :<<<  <<<<<    |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
----------------------------------------------------|<<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge    |    LEVEL OF SERVICE CRITERIA       |
LRV CAPACITY :  50 SEATS + 116 STANDEES              -----------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE     ======================================
   THIS TRIP  THAN LOS .. E / C / B
==========================================  @ Govmt. Center 5:14:22 in  14:57 out  100% seats
PARK    -  |                              | @ B.U. West  36:30 in  37:00 out 85% standees
BOYL  78%  |    THE        78% 78% 78%    | Next in : LRV-2 37:21
ARLI  32%  |    LINK       49% 62% 72%    | (  tail lights not working)
COPL  38%  |EFFICIENCIES   47% 60% 69%    |
AUDI  41%  |    WOULD      47% 60% 69%    |
KENM  49%  |     BE        49% 60% 69%    |
BLAN  72%  |    ....       72% 72% 72%    |
BU.E  51%  |               51% 60% 69%    |
BU.C  11%  |               47% 60% 69%    |
==========================================
      38%    AVERAGE LINK 53% 63% 71%
  GAIN IN RIDERS :
...Link Improvements only 39% 66% 87%
...Link & Dwell Improvements
                          49% 79% <<<
 B O S T O N  C O L L E G E  OUTBOUND #48  SHK  Rider    AVER. TRIP SPEED =  14.7  LOS B
... TUESDAY, DECEMBER 9, 1986   Typed by:   SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip 10:50 P.M.       Checked by: SHK  MAY 8, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST
9   STATIONS|    TIME   |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
============================================================================================
PARK STREET | 55:01-55:28| 75%  0% 23%| 27 - 14 = 13  C| --   --   --      --     -- |131   --
BOYLSTON    | 56:15-56:29| 80%  0% 24%| 14 - 10 =  4  B| 47 - 42 =  5   A 1500' 21.8 | 88  202
ARLINGTON   | 57:52-58:06| 85%  0% 26%| 14 -  9 =  5  B| 83 - 56 = 27   C 2000' 16.4 | 66  260
COPLEY      | 58:55-59:12| 90%  0% 27%| 17 - 11 =  6  B| 49 - 44 =  5   A 1600' 22.3 |112  740
AUDITORIUM 11:00:40-00:58| 95%  0% 29%| 18 -  9 =  9  C| 88 - 75 = 13   A 2800' 21.7 | 85  225
KENMORE     | 02:22-02:40|100%  3% 32%| 18 -  9 =  9  C| 84 - 51 = 33   D 2250' 18.3 |208  315
BLANDFORD   | 03:19-03:32|100%  3% 32%| 13 -  5 =  8  E| 39 - 37 =  2   A 1100' 19.2 | 78  147
B.U.EAST    | 04:23-04:43|100%  5% 34%| 20 -  8 = 12  D| 51 - 39 = 12   B 1400' 18.7 |180  154
B.U.CENTRAL | 05:19-05:37|100%  9% 36%| 18 -  8 = 10  D| 36 - 21 = 15   D  750' 14.2 | 73  178
============================================================================================
* = Best Time |  TOTALS :  --   --   --   159 - 83 = 76   |477 -365 =112   13400'    -- |1021 2221
   Ever ...   |  AVERAGE:  92%  2% 29%  18 -  9 =  8  C| 60 - 46 = 14   B 1675' 19.2 | 11  278
^ = Worst Time|  MAXIMUM: 100%  9% 36%  27    14    13    | 88   75   33      2800' 22.3 |208Worst
   Ever .....|  MINIMUM:  75%  0% 23%  13     5     4    | 36   21    2       750' 14.2 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING   4% LOST DWELL   3sec|LOST LINK  8 sec          10%|Worst
     STANDARD DEVIATION:  LOADING   4% LOST DWELL   3sec|LOST LINK 10 sec          15%|Link 740
-------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet      TIME       TIME    MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --      :.55:.01 <<< :<<<   --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    1:.05:.19  10 :.18   14.7   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------|<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES               -------------------------------------------

       LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
    EFFICIENCY IMPROVED SO NONE WERE WORSE      =======================================
    THIS TRIP  THAN LOS .. E / C / B
=======================================      Arrive at Govmt. Center platform  10:48:00
PARK     -   |                         |      Riverside LRV-1  51:48 in
BOYL   21%   |    THE      21% 21% 21% |      @ B.U.West  07:04 in  07:19 out  6 stand
ARLI   16%   |   LINK      16% 16% 18% |
COPL   23%   |EFFICIENCIES 23% 23% 23% |
AUDI   23%   |   WOULD     23% 23% 23% |
KENM   18%   |    BE       18% 19% 22% |
BLAN   30%   |   ....      30% 30% 30% |
BU.E   24%   |             24% 24% 24% |
BU.C   20%   |             20% 23% 26% |
=======================================
     22%    AVERAGE LINK 22% 23% 24%
  GAIN IN RIDERS :
...Link Improvements only  0%  5%  9%
...Link & Dwell Improvements
                            4%  7% 15%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #49  SHK  Rider     AVER. TRIP SPEED =  13.2  LOS B
.... MONDAY, DECEMBER 15, 1986  Typed by:   SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip 10:45 P.M.       Checked by: SHK  MAY 8, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (one) BV | IN    OUT |SEATS  TOTAL |sec. TIME TIME S|sec. TIME TIME LOS    MPH    |DWELL
==============================================================================================
PARK STREET  | 47:38-48:03| 56%  0% 17%| 25 - 14 = 11  B| --   --   --    --      --  |131  --
BOYLSTON     | 48:56-49:07| 56%  0% 17%| 11 - 10 =  1  A| 53 - 42 = 11  B 1500' 19.3  | 88  202
ARLINGTON    | 50:42-50:56| 60%  0% 18%| 14 -  9 =  5  B| 95 - 56 = 39  D 2000' 14.4  | 66  260
COPLEY       | 51:50-52:09| 68%  0% 20%| 19 - 11 =  8  B| 54 - 44 = 10  B 1600' 20.2  |112  740
AUDITORIUM   | 54:00-54:20| 80%  0% 24%| 20 -  9 = 11  D|111 - 75 = 36  C 2800' 17.2  | 85  225
KENMORE      | 56:10-56:22| 80%  0% 24%| 12 -  9 =  3  A|110 - 51 = 59  F 2250' 13.9  |208  315
BLANDFORD    | 57:05-57:24| 80%  0% 24%| 19 -  5 = 14 F-| 43 - 37 =  6  A 1100' 17.4  | 78  147
B.U.EAST     | 58:06-58:35| 96%  0% 29%| 29 -  8 = 21 F-| 42 - 39 =  3  A 1400' 22.7  |180  154
B.U.CENTRAL  | 59:04-59:35|100% 11% 38%| 31 -  8 = 23 F-| 29 - 21 =  8  B  750' 17.6  | 73  178
==============================================================================================
* = Best Time |  TOTALS :   --   --   --   180 - 83 = 97   |537 -365 =172   13400'   --  |1021 2221
   Ever ...   |  AVERAGE:  75%  1% 23%  20 -  9 = 11  C| 67 - 46 = 22  C 1675' 17.0  | 11  278
^ = Worst Time|  MAXIMUM: 100% 11% 38%  31   14    23   |111   75   59     2800' 22.7  |208Worst
   Ever ..... |  MINIMUM:  56%  0% 17%  11    5     1   | 29   21    3      750' 13.9  |   Dwell
~~~~~~~~  MEAN DEVIATION:   LOADING   6% LOST DWELL   7sec|LOST LINK 18 sec          12%|Worst
     STANDARD DEVIATION:   LOADING   6% LOST DWELL   7sec|LOST LINK 19 sec          21%|Link 740
----------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME    MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --      :.47:.38 <<< :<<<    --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400     :.59:.04  11 :.26   13.2   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------| <<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ------------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ========================================
   THIS TRIP  THAN LOS .. E / C / B
========================================
PARK    -   |                          |
BOYL  13%   |    THE       13% 13% 13% |
ARLI  10%   |    LINK      10% 11% 13% |
COPL  15%   |EFFICIENCIES  15% 15% 15% |
AUDI  14%   |   WOULD      14% 14% 15% |
KENM  11%   |    BE        13% 16% 18% |
BLAN  21%   |   ....       21% 21% 21% |
BU.E  22%   |              22% 22% 22% |
BU.C  21%   |              21% 21% 21% |
========================================
     16%     AVERAGE LINK 16% 17% 18%
  GAIN IN RIDERS :
...Link Improvements only  0%  6% 13%
...Link & Dwell Improvements
                           9% 17% 27%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #50  SHK  Rider     AVER. TRIP SPEED =  15.8  LOS A
.... MONDAY, JANUARY 26, 1987   Typed by:    SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip 10:40 P.M.       Checked by: SHK  MAY 8, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME      |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (one) BV|  IN     OUT  |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS       MPH  |DWELL
==============================================================================================
PARK STREET  | 42:56-43:15| 48%  0% 14%| 19 - 14 =  5  A| --   --   --      --      -- |131   --
BOYLSTON     | 43:57-44:13| 52%  0% 16%| 16 - 10 =  6  B| 42*- 42 =  0* A 1500' 24.4*| 88  202
ARLINGTON    | 45:35-45:51| 68%  0% 20%| 16 -  9 =  7  B| 82 - 56 = 26  C 2000' 16.6 | 66  260
COPLEY       | 46:42-46:55| 60%  0% 18%| 13 - 11 =  2  A| 51 - 44 =  7  A 1600' 21.4 |112  740
AUDITORIUM   | 48:15-48:31| 72%  0% 22%| 16 -  9 =  7  B| 80 - 75 =  5  A 2800' 23.9 | 85  225
KENMORE      | 49:50-50:08| 72%  0% 22%| 18 -  9 =  9  C| 79 - 51 = 28  C 2250' 19.4 |208  315
BLANDFORD    | 50:52-51:01| 72%  0% 22%|  9 -  5 =  4  C| 44 - 37 =  7  A 1100' 17.0 | 78  147
B.U.EAST     | 51:40-51:40| 72%  0% 22%|  0 -  8 =  0  A| 39*- 39 =  0* A 1400' 24.5*|180  154
B.U.CENTRAL  | 52:29-52:40|100%  0% 30%| 11 -  8 =  3  A| 49 - 21 = 28 F-  750' 10.4 | 73  178
==============================================================================================
* = Best Time |  TOTALS.:  --   --   --  118 - 83 = 43  |466 -365 =101    13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  68%  0% 21%  13 -  9 =  5  B| 58 - 46 = 13  B 1675' 19.6 | 11  278|
^ = Worst Time|  MAXIMUM: 100%  0% 30%  19    14     9   | 82   75   28     2800' 24.5 |208Worst
    Ever .....|  MINIMUM:  48%  0% 14%   0     5     0   | 39   21    0      750' 10.4 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING  4% LOST DWELL  3sec|LOST LINK 11 sec          17%|Worst
       STANDARD DEVIATION:  LOADING  4% LOST DWELL  3sec|LOST LINK 12 sec          27%|Link 740
----------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME        TIME    MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --       --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     :.42:.56 <<< :<<<    --    |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    :.52:.29   9 :.33   15.8   |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 3.0   or  => F=  <= 1.5   or  LINK
-------------------------------------------------------|<<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                  ------------------------------------

      LINK     SUPPOSE ALL LINK TIMES WERE       TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE        ======================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================       Arrived at Government Center platform : 10:10:30
PARK    -   |                           |       Brig. Circ. LRV-1 14:16 in  15:20 out
BOYL  14%   |    THE          14% 14% 14%|       Riverside LRV-1 18:55 in 19:15 out
ARLI  11%   |    LINK         11% 11% 12%|       Cleve Circ. LRV-1 19:42 in 20:20 out w/ standees
COPL  17%   |EFFICIENCIES 17% 17% 17%|       Riverside LRV-1 23:24 out w/standees
AUDI  17%   |    WOULD        17% 17% 17%|       Beacon St. LRV-1 24:55 in 25:15 out
KENM  14%   |     BE          14% 14% 17%|       Riverside LRV-1 25:48 in 26:00 out
BLAN  19%   |    ....         19% 19% 19%|       Brig. Circle LRV-1 27:14 in 27:58 out jammed
BU.E  22%   |                 22% 22% 22%|       Cleveland Circ. LRV-1 29:51 in 30:15 out  1/2 seat
BU.C   9%   |                 12% 15% 17%|       Cleve. Circ.  32:57 in 33:11 out
=======================================       Riverside  35:29 in 36:25 out
     16%    AVERAGE LINK 17% 17% 18%          Brig. Circle 37:30 in 38:01 out
  GAIN IN RIDERS :                             Boston College  40:34 in 40:55 out 3 seated
...Link Improvements only  6%  6% 13%               (enter station with lights off)
...Link & Dwell Improvements                   @ B.U.West  54:05 in  54:24 out 100% seat
                           3%  5% 11%          Home at 11:10 with fast walk
```

```
 B O S T O N   C O L L E G E   OUTBOUND #51  SHK  Rider     AVER. TRIP SPEED =  17.6  LOS A
..THURSDAY, JANUARY 29, 1987    Typed by:    SHK  MAR.17, 89  Previous Worst =   5.1  LOS F
 ..Begin Trip 12:00 A.M.        Checked by: SHK  MAY 8, 89   Previous Best  =  16.8  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989=================
 2.5 MILES    |  STATION    Max166 Riders|  DWELL TIME     L| STATION-STATION or "LINK"   | WORST
9   STATIONS|   TIME     |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
================================================================================================
PARK STREET  | 06:45-07:06| 40%   0% 12%| 21 - 14 =  7  B| --   --   --      --     -- |131  --
BOYLSTON     | 07:51-08:01| 48%   0% 14%| 10*- 10 =  0* A| 45 - 42 =  3  A 1500' 22.7  | 88  202
ARLINGTON    | 09:04-09:19| 64%   0% 19%| 15 -  9 =  6  B| 63 - 56 =  7  A 2000' 21.6  | 66  260
COPLEY       | 10:03-10:19| 80%   0% 24%| 16 - 11 =  5  B| 44*- 44 =  0* A 1600' 24.8* |112  740
AUDITORIUM   | 11:34-11:47| 72%   0% 22%| 13 -  9 =  4  B| 75*- 75 =  0* A 2800' 25.5* | 85  225
KENMORE      | 12:57-13:12| 68%   0% 20%| 15 -  9 =  6  B| 70 - 51 = 19  B 2250' 21.9  |208  315
BLANDFORD    | 13:50-13:59| 72%   0% 22%|  9 -  5 =  4  C| 38 - 37 =  1  A 1100' 19.7  | 78  147
B.U.EAST     | 14:39-14:52| 72%   0% 22%| 13 -  8 =  5  B| 40 - 39 =  1  A 1400' 23.9  |180  154
B.U.CENTRAL  | 15:20-15:28| 72%   0% 22%|  8*-  8 =  0* A| 28 - 21 =  7  B  750' 18.3  | 73  178
================================================================================================
* = Best Time |  TOTALS :   --   --   --  120 - 83 = 37   |403 -365 = 38   13400'   --  |1021 2221
   Ever ...   |  AVERAGE:   65%  0%  20%  13 -  9 =  4  B|  50 - 46 =  5  A 1675' 22.7  |  11  278
^ = Worst Time|  MAXIMUM:   80%  0%  24%  21   14    7    |  75   75   19     2800' 25.5  |208Worst
   Ever .....|  MINIMUM:   40%  0%  12%   8    5    0    |  28   21    0      750' 18.3  |  Dwell
--------    MEAN DEVIATION:  LOADING  3% LOST DWELL  2sec|LOST LINK  5 sec            8%|Worst
        STANDARD DEVIATION:  LOADING  4% LOST DWELL  2sec|LOST LINK  6 sec           10%|Link 740
------------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --       --  |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<< |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     2:.06:.45 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    2:.15:.20  8  :.35   17.6  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<< |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<< |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<< |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |       LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES               ------------------------------------------
```

```
     LINK     SUPPOSE ALL LINK TIMES WERE
  EFFICIENCY IMPROVED SO NONE WERE WORSE
  THIS TRIP   THAN LOS .. E / C / B
========================================
PARK    -  |                            |
BOYL  11%  |    THE        11% 11% 11%  |
ARLI  12%  |   LINK        12% 12% 12%  |
COPL  19%  |EFFICIENCIES  19% 19% 19%  |
AUDI  24%  |   WOULD       24% 24% 24%  |
KENM  16%  |    BE         16% 16% 16%  |
BLAN  19%  |   ....        19% 19% 19%  |
BU.E  21%  |               21% 21% 21%  |
BU.C  17%  |               17% 17% 17%  |
========================================
     18%    AVERAGE LINK 18% 18% 18%
 GAIN IN RIDERS :
...Link Improvements only  0%  0%  0%
...Link & Dwell Improvements
                           2%  2%  2%
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
======================================

At Government Center platform :
Cleveland Circle LRV-1 12:01:45 in 01:51 out
Boston College LRV-1 05:05 in 05:23 out 7 seated
@ Boston Univ. West driver missed stop at 16:20
@ Amory Street : 18:11 in 18:24 out
Lost 6 minutes walking bacvk one stop.
Arrived home at 12:40

```
 B O S T O N  C O L L E G E  OUTBOUND #52  SHK  Rider    AVER. TRIP SPEED =  12.6  LOS C
..WEDNESDAY, FEBRUARY 4, 1987  Typed by:   SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  8:00 P.M.       Checked by: SHK  MAY 8, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   |  WORST  |
9  STATIONS|   TIME    |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
================================================================================================
PARK STREET | 59:37-59:56| 24%  0%  7%| 19 - 14 =  5  A|  --    --    --    --    -- |131   --
BOYLSTON   9:00:44-00:55| 24%  0%  7%| 11 - 10 =  1  A| 48  - 42 =  6  A 1500' 21.3 | 88  202
ARLINGTON   |  02:31-02:45| 28%  0%  8%| 14 -  9 =  5  B| 96  - 56 = 40  D 2000' 14.2 | 66  260
COPLEY      |  04:01-04:22| 24%  0%  7%| 21 - 11 = 10  C| 76  - 44 = 32  D 1600' 14.4 |112  740
AUDITORIUM  |  06:21-06:34| 24%  0%  7%| 13 -  9 =  4  B|119  - 75 = 44  C 2800' 16.0 | 85  225
KENMORE     |  08:12-08:26| 16%  0%  5%| 14 -  9 =  5  B| 98  - 51 = 47  E 2250' 15.7 |208  315
BLANDFORD   |  09:15-09:32| 20%  0%  6%| 17 -  5 = 12 F-| 49  - 37 = 12  B 1100' 15.3 | 78  147
B.U.EAST    |  10:44-11:00| 32%  0% 10%| 16 -  8 =  8  C| 72  - 39 = 33  E 1400' 13.3 |180  154
B.U.CENTRAL |  11:35-11:55| 40%  0% 12%| 20 -  8 = 12  D| 35  - 21 = 14  D  750' 14.6 | 73  178
================================================================================================
* = Best Time  |  TOTALS :  --   --   --  145 - 83 = 62   |593 -365 =228   13400'   -- |1021 2221
   Ever ...    |  AVERAGE:  26%  0%  8%  16 -  9 =  7  B | 74 - 46 = 29  D 1675' 15.4 | 11  278
^ = Worst Time|  MAXIMUM:  40%  0% 12%  21    14    12    |119    75    47    2800' 21.3 |208Worst
   Ever .....|  MINIMUM:  16%  0%  5%  11     5     1    | 35    21     6     750' 13.3 |  Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING   2% LOST DWELL   4sec|LOST LINK 13 sec           9%|Worst
    STANDARD DEVIATION:  LOADING   2% LOST DWELL   4sec|LOST LINK 15 sec          21%|Link 740
------------------------------------------------------------------------------------------------
               DISTANCE   CLOCK      ELAPSED   SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                 Feet      TIME        TIME     MPH  |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<      --       --  |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives     --     8:.59:.37 <<< :<<<     --   |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip    13,400   9:.11:.35  11 :.58    12.6  |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES              ------------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE     ======================================
  THIS TRIP  THAN LOS .. E / C / B
=========================================   At Government Center platform :
PARK    -   |                           |   Brigham Circle  7:48:50 in  49:17 out
BOYL   6%   |    THE        6%  6%  6%  |   Riverside LRV-1  51:04 in 51:32 out
ARLI   4%   |    LINK       4%  5%  5%  |   Beacon  LRV-1 54:20 in  55:05 out
COPL   5%   |EFFICIENCIES   5%  5%  6%  |   Brigham Circle  LRV-1 56:06 in 56:21 out
AUDI   4%   |   WOULD       4%  4%  5%  |   Riverside  LRV-1  56:35 in  57:04 out
KENM   4%   |    BE         4%  5%  5%  |   Boston College  LRV-1 57:19 in 57:36 out
BLAN   4%   |   ....        4%  4%  4%  |   @ B.U. West  13:00 in 13:15 out
BU.E   3%   |               3%  4%  5%  |
BU.C   6%   |               6%  7%  8%  |
=========================================
      5%    AVERAGE LINK  5%  5%  6%
  GAIN IN RIDERS :
...Link Improvements only  0%  0% 20%
...Link & Dwell Improvements
                          -1%  8% 22%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #53  SHK  Rider     AVER. TRIP SPEED =  10.5  LOS D
.... FRIDAY, APRIL 17, 1987     Typed by:    SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  7:55 P.M.        Checked by: SHK  MAY 8, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
==========================================================================================
PARK STREET  | 54:21-55:23|100% 50% 65%|  62 - 14 = 48 F=|  --    --    --      --     -- |131   --
BOYLSTON     | 56:47-57:04|100% 50% 65%|  17 - 10 =  7  B|  84 - 42 = 42  F 1500' 12.2 | 88  202
ARLINGTON    | 58:54-59:18|100% 50% 65%|  24 -  9 = 15  E|110 - 56 = 54  E 2000' 12.4 | 66  260
COPLEY      8:00:28-00:57|100% 33% 53%|  29 - 11 = 18  E|  70 - 44 = 26  C 1600' 15.6 |112  740
AUDITORIUM   | 02:43-03:10|100% 50% 65%|  27 -  9 = 18  F|106 - 75 = 31  C 2800' 18.0 | 85  225
KENMORE      | 04:42-05:07|100% 75% 83%|  25 -  9 = 16  E|  92 - 51 = 41  E 2250' 16.7 |208  315
BLANDFORD    | 05:53-06:30|100% 75% 83%|  37 -  5 = 32 F=|  46 - 37 =  9  B 1100' 16.3 | 78  147
B.U.EAST     | 07:25-07:57|100% 75% 83%|  32 -  8 = 24 F=|  55 - 39 = 16  C 1400' 17.4 |180  154
B.U.CENTRAL  | 08:45-09:07|100% 75% 83%|  22 -  8 = 14  E|  48 - 21 = 27 F-  750' 10.7 | 73  178
==========================================================================================
* = Best Time |  TOTALS :  --   --   --   275 - 83 =192   |611 -365 =246   13400'    -- |1021 2221
   Ever ...   |  AVERAGE: 100% 59% 72%   31 -  9 = 21   F| 76 - 46 = 31  D 1675' 15.0 | 11  278
^ = Worst Time|  MAXIMUM: 100% 75% 83%   62    14    48   |110   75    54     2800' 18.0 |208Worst
   Ever .....|  MINIMUM: 100% 33% 53%   17     5     7   | 46   21     9      750' 10.7 |   Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING 11% LOST DWELL 10sec|LOST LINK 11 sec            14%|Worst
    STANDARD DEVIATION:  LOADING 11% LOST DWELL 11sec|LOST LINK 14 sec            19%|Link 740
------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME       TIME      MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --        --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     7:.54:.21 <<< :<<<     --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    8:.08:.45  14 :.24    10.5    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
--------------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                  ------------------------------------------
```

```
     LINK    SUPPOSE ALL LINK TIMES WERE
  EFFICIENCY IMPROVED SO NONE WERE WORSE
   THIS TRIP  THAN LOS .. E / C / B
=========================================
PARK    -   |                        |
BOYL  33%   |   THE       33% 43% 50% |
ARLI  33%   |   LINK      33% 43% 50% |
COPL  41%   |EFFICIENCIES 41% 41% 50% |
AUDI  38%   |  WOULD      38% 38% 41% |
KENM  36%   |   BE        36% 43% 50% |
BLAN  67%   |  ....       67% 67% 67% |
BU.E  59%   |             59% 59% 64% |
BU.C  36%   |             44% 55% 64% |
=========================================
      43%    AVERAGE LINK 44% 49% 56%
  GAIN IN RIDERS :
...Link Improvements only  2% 14% 30%
...Link & Dwell Improvements
                         12% 29% 49%
```

```
TRIP NOTES -- OTHER TRAINS AND COMMENTS
=======================================

Arrive at Government Center platform at 7:42:30
Riverside LRV-1 43:00 in 43:50 out loaded
   (sign says : "X No Pass."
Brigham Circle LRV-1  44:02 in  44:35 out
Beacon St.  LRV-1 44:50 in 45:02 out
Riverside LRV-1 51:45 in 52:50 out
ANNOUNCEMENT : All BC trains leave from Park St.
        51:30
Boston College at Park Street :
54:21 in  55:23 out  1/2 standees
```

```
 B O S T O N  C O L L E G E  OUTBOUND #54  SHK  Rider    AVER. TRIP SPEED =  11.2  LOS D
....TUESDAY, JUNE 23, 1987      Typed by:   SHK  MAR.24, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:50 P.M.        Checked by: SHK  MAY 15, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST  |
9  STATIONS|   TIME    |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN   OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
============================================================================================
PARK STREET  | 53:10-53:57|100% 16% 41%| 47 - 14 = 33  F| --    --    --     --     -- |131  -- |
BOYLSTON     | 54:48-55:08|100% 16% 41%| 20 - 10 = 10  C| 51 - 42 =  9  B 1500' 20.1 | 88  202|
ARLINGTON    | 56:45-57:11|100% 26% 48%| 26 -  9 = 17  E| 97 - 56 = 41  D 2000' 14.1 | 66  260|
COPLEY       | 58:07-58:45|100% 20% 44%| 38 - 11 = 27 F-| 56 - 44 = 12  B 1600' 19.5 |112  740|
AUDITORIUM  7:00:55-02:06|100% 10% 37%| 71 -  9 = 62 F=|130 - 75 = 55  D 2800' 14.7 | 85  225|
KENMORE      | 03:36-04:01|100%  0% 30%| 25 -  9 = 16  E| 90 - 51 = 39  D 2250' 17.0 |208  315|
BLANDFORD    | 04:43-05:01| 96%  0% 29%| 18 -  5 = 13 F-| 42 - 37 =  5  A 1100' 17.9 | 78  147|
B.U.EAST     | 05:49-06:06|100%  3% 32%| 17 -  8 =  9  C| 48 - 39 =  9  B 1400' 19.9 |180  154|
B.U.CENTRAL  | 06:39-06:54|100%  9% 36%| 15 -  8 =  7  C| 33 - 21 = 12  C  750' 15.5 | 73  178|
============================================================================================
* = Best Time |  TOTALS :  --   --   --   277 - 83 =194   |547 -365 =182   13400'   -- |1021 2221
   Ever ...   |  AVERAGE: 100% 11% 38%   31 -  9 = 22  F| 68 - 46 = 23  C 1675' 16.7 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 26% 48%   71   14   62   |130   75   55    2800' 20.1 |208Worst|
   Ever .....|  MINIMUM:  96%  0% 29%   15    5    7   | 33   21    5     750' 14.1 |   Dwell|
~~~~~~~~~  MEAN DEVIATION:  LOADING  6% LOST DWELL 14sec|LOST LINK 17 sec          11%|Worst   |
     STANDARD DEVIATION:  LOADING  6% LOST DWELL 16sec|LOST LINK 18 sec          17%|Link 740|
-------------------------------------------------------------------------------------------
              DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                Feet     TIME        TIME    MPH  |   DWELL  .0 - .4 => A  <=  .0 - .2 LINK
Leave Door ...   --    <:<<<:<<<     --      --   |   DWELL  .4 - .8 => B  <=  .2 - .4 LINK
Arrive Platform 2,500  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 => C  <=  .4 - .6 LINK
Train Arrives    --    6:.53:.10 <<< :<<<    --   |   DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK
Transit Trip   13,400  7:.06:.39  13 :.29   11.2  |   DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK
Arrive Door ... 3,800  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK
Total Trip ... 19,700  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK
Straight Line  12,500  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F= <= 1.5  or  LINK
--------------------------------------------------| <<<<<<<<<<<> more              more   |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge  |     LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES            ----------------------------------------

   LINK      SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY  IMPROVED SO NONE WERE WORSE     =======================================
 THIS TRIP   THAN LOS .. E / C / B
===================================       Boston College @ Government Center :
PARK    -  |                         |              50:51 in  51:23 out  40% seated
BOYL  34%  |    THE        34% 34% 34%|
ARLI  24%  |   LINK        24% 27% 32%|
COPL  38%  |EFFICIENCIES  38% 38% 38%|
AUDI  25%  |   WOULD       25% 29% 34%|
KENM  21%  |    BE         21% 25% 28%|
BLAN  26%  |   ....        26% 26% 26%|
BU.E  24%  |               24% 24% 24%|
BU.C  20%  |               20% 20% 25%|
===================================
     25%   AVERAGE LINK  25% 28% 30%
  GAIN IN RIDERS :
...Link Improvements only  0% 12% 20%
...Link & Dwell Improvements
                           10% 22% 37%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #55  SHK  Rider     AVER. TRIP SPEED =  10.4  LOS D
.... MONDAY, JANUARY 4, 1988    Typed by:    SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:55 P.M.       Checked by: SHK  MAY 9, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST
9   STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |   LINK
LRV (two) BV|  IN    OUT|SEATS   TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
==========================================================================================
PARK STREET |  54:20-55:12| 88%  0% 27%| 52 - 14 = 38 F-| --   --   --     --    --  |131  --
BOYLSTON    |  56:19-56:35| 92%  0% 28%| 16 - 10 =  6  B| 67 - 42 = 25  D 1500' 15.3 | 88  202
ARLINGTON   |  58:50-59:10|100%  1% 31%| 20 -  9 = 11  D|135 - 56 = 79 F- 2000' 10.1 | 66  260
COPLEY     7:00:06-00:48|100%  7% 35%| 42 - 11 = 31 F-| 56 - 44 = 12  B 1600' 19.5 |112  740
AUDITORIUM  |  03:29-03:52|100%  0% 30%| 23 -  9 = 14  D|161 - 75 = 86  F 2800' 11.9 | 85  225
KENMORE     |  05:59-06:19|100%  0% 30%| 20 -  9 = 11  D|127 - 51 = 76 F- 2250' 12.1 |208  315
BLANDFORD   |  06:59-07:14|100%  0% 30%| 15 -  5 = 10  F| 40 - 37 =  3  A 1100' 18.8 | 78  147
B.U.EAST    |  08:05-08:17|100%  0% 30%| 12 -  8 =  4  B| 51 - 39 = 12  B 1400' 18.7 |180  154
B.U.CENTRAL |  08:50-09:04|100%  0% 30%| 14 -  8 =  6  B| 33 - 21 = 12  C  750' 15.5 | 73  178
==========================================================================================
* = Best Time |  TOTALS :  --  --  --  214 - 83 =131   |670 -365 =305   13400'    --  |1021 2221
    Ever ...  |  AVERAGE:  98%  1% 30%  24 -  9 = 15  D| 84 - 46 = 38  E 1675' 13.6 | 11  278|
^ = Worst Time|  MAXIMUM: 100%  7% 35%  52   14   38   |161   75   86     2800' 19.5 |208Worst|
    Ever .....|  MINIMUM:  88%  0% 27%  12    5    4   | 33   21    3      750' 10.1 |   Dwell|
~~~~~~~~   MEAN DEVIATION:  LOADING  1% LOST DWELL 10sec|LOST LINK 32 sec          22%|Worst
     STANDARD DEVIATION:  LOADING  2% LOST DWELL 11sec|LOST LINK 33 sec          31%|Link 740
------------------------------------------------------------------------------------------
              DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...   --    <:<<<:<<<      --      --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500  <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives    --    6:.54:.20 <<< :<<<    --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400  7:.08:.50  14 :.30   10.4    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ... 3,800  <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ... 19,700  <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line . 12,500 <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
----------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge    |      LEVEL OF SERVICE CRITERIA     |
LRV CAPACITY :  50 SEATS + 116 STANDEES             ---------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE     =======================================
  THIS TRIP  THAN LOS .. E / C / B
==============================               Arrive Park Street platform : 6:37 PM
PARK    -   |                          |     Riverside LRV-2 6:37:30 in
BOYL  17%   |    THE      17% 17% 21%  |     Riverside LRV-2   38:45 in
ARLI  12%   |   LINK      15% 19% 22%  |     Cleveland Cir. LRV-2  40:20 in  40:59 out
COPL  24%   |EFFICIENCIES 24% 24% 24%  |     Brig. Circle LRV-1  41:16 in 41:51 out
AUDI  16%   |   WOULD     18% 23% 27%  |     Boston Coll. LRV-1(7) 43:06 in 44:33 out 95% full
KENM  12%   |    BE       16% 20% 23%  |     (Announcer : Apology for delay for mech. problems)
BLAN  28%   |   ....      28% 28% 28%  |     Cleveland Circle LRV-2  47:16  48:20 out
BU.E  23%   |             23% 23% 23%  |     Brigham Circle LRV-1(7) 50:50 in 52:08 out
BU.C  19%   |             19% 19% 23%  |     Boston College LRV-1(7) 52:15 in 53:15 out
==============================                  Express top Kenmore....
     16%    AVERAGE LINK 18% 21% 23%          Boston College 53:40 thru train, lights off LRV-2
  GAIN IN RIDERS :                            Arrive at home  7:27:10
...Link Improvements only 13% 31% 44%
...Link & Dwell Improvements
                          18% 34% 51%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #56  SHK  Rider     AVER. TRIP SPEED =   5.8  LOS F=
 WEDNESDAY, JANUARY 20, 1988    Typed by:    SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:30 P.M.        Checked by: SHK  MAY 9, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST
9   STATIONS|    TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN     OUT|SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH |DWELL
==============================================================================================
PARK STREET | 32:18-33:37| 55%  0% 17%| 79 - 14 = 65 F=| --   --    --    --     -- |131  --
BOYLSTON    | 35:43-36:14| 65%  0% 20%| 31 - 10 = 21  F|126 - 42 = 84 F= 1500'  8.1 | 88  202
ARLINGTON   | 38:46-39:08|100%  3% 32%| 22 -  9 = 13  D|152 - 56 = 96 F= 2000'  9.0 | 66  260
COPLEY      | 44:53-45:48|100% 10% 37%| 55 - 11 = 44 F=|345 - 44 =301 F= 1600'  3.2 |112  740
AUDITORIUM  | 49:07-49:26|100% 11% 38%| 19 -  9 = 10  C|199 - 75 =124 F= 2800'  9.6 | 85  225
KENMORE     | 51:13-51:33|100% 11% 38%| 20 -  9 = 11  D|107 - 51 = 56  F 2250' 14.3 |208  315
BLANDFORD   | 53:59-54:17|100% 10% 37%| 18 -  5 = 13 F-|146 - 37 =109 F= 1100'  5.1 | 78  147
B.U.EAST    | 56:51-57:09|100%  8% 36%| 18 -  8 = 10  D|154^- 39 =115^F= 1400'  6.2^|180  154
B.U.CENTRAL | 58:01-58:22|100%  8% 36%| 21 -  8 = 13  E| 52 - 21 = 31 F-  750'  9.8 | 73  178
==============================================================================================
* = Best Time |  TOTALS :  --  --  --  283 - 83 =200  |1281-365 =916   13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  91%  7% 32%  31 -  9 = 22 F-|160 - 46 =115 F= 1675'  7.1 | 11  278
^ = Worst Time|  MAXIMUM: 100% 11% 38%  79   14   65   |345   75  301     2800' 14.3 |208Worst
    Ever .....|  MINIMUM:  55%  0% 17%  18    5   10   | 52   21   31      750'  3.2 |   Dwell
--------      MEAN DEVIATION:  LOADING  7% LOST DWELL 16sec|LOST LINK 49 sec          35%|Worst
         STANDARD DEVIATION:  LOADING  8% LOST DWELL 18sec|LOST LINK 76 sec          48%|Link 740
----------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME        TIME     MPH   |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --       --    |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives      --     5:.32:.18 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip    13,400    5:.58:.01  25 :.43    5.8    |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<<> more                more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |       LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                ---------------------------------------

    LINK    SUPPOSE ALL LINK TIMES WERE        TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE       =======================================
  THIS TRIP  THAN LOS .. E / C / B
======================================      Riverside LRV-2 at Park : 5:31:50 IN
PARK     -  |                          |      On Boston College train : numerous delays and
BOYL    6%  |    THE        9% 11% 13% |                 waits in tunnel.
ARLI    7%  |    LINK      11% 13% 15% |      Next train at B.U.Central   6:00:20 in
COPL    4%  |EFFICIENCIES  17% 21% 25% |      Arrive at door :  6:16:20
AUDI   14%  |   WOULD      19% 25% 28% |
KENM   18%  |    BE        20% 25% 29% |
BLAN   10%  |   ....       20% 25% 29% |
BU.E    9%  |              19% 25% 28% |
BU.C   15%  |              19% 24% 28% |
======================================
     9%    AVERAGE LINK 17% 21% 25%
  GAIN IN RIDERS :
...Link Improvements only 89% 133%178%
...Link & Dwell Improvements
                              <<< <<< <<<
 B O S T O N  C O L L E G E  OUTBOUND #57  SHK  Rider     AVER. TRIP SPEED =  10.0  LOS E
... THURSDAY, FEBRUARY 4, 1988  Typed by:   SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:05 P.M.        Checked by: SHK  MAY 9, 89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9   STATIONS |    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |   LINK |
LRV (two) BV |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL   |
=============================================================================================
PARK STREET  | 05:23-05:50|100%   9% 36%| 27 - 14 = 13  C|  --    --   --     --    -- |131  -- |
BOYLSTON     | 06:43-06:58|100%   9% 36%| 15 - 10 =  5  B| 53 - 42 = 11  B 1500' 19.3 | 88  202|
ARLINGTON    | 09:42-10:05|100%  11% 38%| 23 -  9 = 14  D|164 - 56 =108 F= 2000'  8.3 | 66  260|
COPLEY       | 12:02-12:26|100%   7% 35%| 24 - 11 = 13  C|117 - 44 = 73 F= 1600'  9.3 |112  740|
AUDITORIUM   | 14:42-14:59|100%   4% 33%| 17 -  9 =  8  C|136 - 75 = 61  E 2800' 14.0 | 85  225|
KENMORE      | 16:53-17:17|100%   5% 34%| 24 -  9 = 15  E|114 - 51 = 63 F- 2250' 13.5 |208  315|
BLANDFORD    | 18:05-18:19|100%   5% 34%| 14 -  5 =  9  E| 48 - 37 = 11  B 1100' 15.6 | 78  147|
B.U.EAST     | 19:22-19:35|100%   7% 35%| 13 -  8 =  5  B| 63 - 39 = 24  D 1400' 15.2 |180  154|
B.U.CENTRAL  | 20:26-20:38|100%   5% 34%| 12 -  8 =  4  B| 51 - 21 = 30 F-  750' 10.0 | 73  178|
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  169 - 83 = 86   |746 -365 =381   13400'   -- |1021 2221
   Ever ...   |  AVERAGE: 100%  7% 35%  19 -  9 = 10  C | 93 - 46 = 48  F 1675' 12.2 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 11% 38%  27    14    15   |164   75  108     2800' 19.3 |208Worst|
   Ever .....|  MINIMUM: 100%  4% 33%  12     5     4   | 48   21   11      750'  8.3 |   Dwell|
---------   MEAN DEVIATION:  LOADING   1% LOST DWELL   4sec|LOST LINK 29 sec          23%|Worst   |
       STANDARD DEVIATION:  LOADING   1% LOST DWELL   4sec|LOST LINK 32 sec          37%|Link 740|
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK     ELAPSED . SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     5:.05:.23 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    5:.20:.26  15 :.03    10.0   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line ' 12,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ------------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ========================================
   THIS TRIP  THAN LOS .: E / C / B
======================================       Riverside  5:05:05 out
PARK    -    |                        |      Weather : light snow ending
BOYL  29%    |    THE      29% 29% 29%|
ARLI  12%    |    LINK     19% 24% 28%|
COPL  14%    |EFFICIENCIES 20% 25% 29%|
AUDI  19%    |   WOULD     19% 23% 27%|
KENM  15%    |    BE       17% 22% 25%|
BLAN  26%    |   ....      26% 26% 26%|
BU.E  21%    |             21% 23% 26%|
BU.C  14%    |             18% 23% 27%|
======================================
      17%    AVERAGE LINK 20% 24% 27%
  GAIN IN RIDERS :
...Link Improvements only 18% 41% 59%
...Link & Dwell Improvements
                          18% 36% 54%
 B O S T O N   C O L L E G E   OUTBOUND #58  SHK  Rider     AVER. TRIP SPEED =  11.1  LOS D
.. THURSDAY, FEBRUARY 18, 1988  Typed by:    SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:55 P.M.        Checked by: SHK  MAY 10, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9  STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |   LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
=============================================================================================
PARK STREET  | 54:17-55:21|100% 50% 65%| 64 - 14 = 50 F=| --   --   --      --    -- |131   --
BOYLSTON     | 56:10-56:33|100% 51% 66%| 23 - 10 = 13  D| 49 - 42 =  7  A 1500' 20.9 | 88  202
ARLINGTON    | 58:04-58:30|100% 50% 65%| 26 -  9 = 17  E| 91 - 56 = 35  D 2000' 15.0 | 66  260
COPLEY       | 59:26-59:57|100% 48% 64%| 31 - 11 = 20  E| 56 - 44 = 12  B 1600' 19.5 |112  740
AUDITORIUM  5:01:40-02:03|100% 46% 62%| 23 -  9 = 14  D|103 - 75 = 28  B 2800' 18.5 | 85  225
KENMORE      | 03:41-04:11|100% 44% 61%| 30 -  9 = 21  F| 98 - 51 = 47  E 2250' 15.7 |208  315
BLANDFORD    | 04:56-05:25|100% 46% 62%| 29 -  5 = 24 F=| 45 - 37 =  8  B 1100' 16.7 | 78  147
B.U.EAST     | 06:51-07:22|100% 45% 62%| 31 -  8 = 23 F-| 86 - 39 = 47 F- 1400' 11.1 |180  154
B.U.CENTRAL  | 07:54-08:18|100% 44% 61%| 24 -  8 = 16  F| 32 - 21 = 11  C  750' 16.0 | 73  178
=============================================================================================
* = Best Time  |  TOTALS :  --  --  --   281 - 83 =198   |560 -365 =195   13400'    -- |1021 2221
   Ever ...    |  AVERAGE: 100% 47% 63%  31 -  9 = 22  F | 70 - 46 = 24  C 1675' 16.3 | 11  278
^ = Worst Time|  MAXIMUM: 100% 51% 66%  64    14    50   |103   75   47    2800' 20.9 |208Worst
   Ever .....|  MINIMUM: 100% 44% 61%  23     5    13   | 32   21    7     750' 11.1 |   Dwell
~~~~~~~~~   MEAN DEVIATION:   LOADING   2% LOST DWELL   8sec|LOST LINK 15 sec          12%|Worst
       STANDARD DEVIATION:   LOADING   2% LOST DWELL  11sec|LOST LINK 16 sec          23%|Link 740
---------------------------------------------------------------------------------------------

                   DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                     Feet      TIME       TIME      MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...        --     <:<<<:<<<     --        --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform    2,500     <:<<<:<<< <<< :<<<    <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives         --     4:.54:.17 <<< :<<<     --    |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip      13,400     5:.07:.54  13 :.37    11.1   |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...    3,800     <:<<<:<<< <<< :<<<    <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...    19,700     <:<<<:<<< <<< :<<<    <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line     12,500     <:<<<:<<< <<< :<<<    <<<<<  |  DWELL 3.0   or  => F=  <= 1.5   or LINK
----------------------------------------------------------|<<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge           |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                    ---------------------------------------

        LINK     SUPPOSE ALL LINK TIMES WERE       TRIP NOTES -- OTHER TRAINS AND COMMENTS
    EFFICIENCY IMPROVED SO NONE WERE WORSE         ========================================
     THIS TRIP   THAN LOS .. E / C / B
=====================================             Three trains were bunched up from B.U.Central
PARK     -     |                       |                 to Blandford Street.
BOYL   56%     |    THE      56% 56% 56%|
ARLI   41%     |    LINK     41% 44% 51%|
COPL   51%     |EFFICIENCIES 51% 51% 51%|
AUDI   47%     |    WOULD    47% 47% 47%|
KENM   32%     |     BE      32% 41% 48%|
BLAN   50%     |    ....     50% 50% 50%|
BU.E   28%     |             33% 41% 48%|
BU.C   41%     |             41% 41% 48%|
=====================================
      41%    AVERAGE LINK 42% 46% 49%
  GAIN IN RIDERS :
...Link Improvements only  2% 12% 20%
...Link & Dwell Improvements
                          11% 24% 38%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #59  SHK  Rider     AVER. TRIP SPEED =  10.1  LOS D
.. THURSDAY, MARCH 24, 1988      Typed by:    SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:05 P.M.        Checked by: SHK  MAY 10, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION· Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST  |
9   STATIONS|   TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED|    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH |DWELL   |
===========================================================================================|
PARK STREET  | 07:35-08:49|100% 80% 86%|  74 - 14 = 60 F=| --   --   --      --    -- |131  -- |
BOYLSTON     | 09:42-10:06|100% 85% 90%|  24 - 10 = 14  D|  53 - 42 = 11  B 1500' 19.3|  88  202|
ARLINGTON    | 11:47-12:32|100% 85% 90%|  45 -  9 = 36 F=| 101 - 56 = 45  E 2000' 13.5|  66  260|
COPLEY       | 13:30-14:08|100% 80% 86%|  38 - 11 = 27 F-|  58 - 44 = 14  B 1600' 18.8| 112  740|
AUDITORIUM   | 15:56-16:25|100% 70% 79%|  29 -  9 = 20  F| 108 - 75 = 33  C 2800' 17.7|  85  225|
KENMORE      | 18:03-18:35|100% 60% 72%|  32 -  9 = 23 F-|  98 - 51 = 47  E 2250' 15.7| 208  315|
BLANDFORD    | 19:13-20:31|100% 65% 76%|  78^-  5 = 73^F=|  38 - 37 =  1  A 1100' 19.7|  78  147|
B.U.EAST     | 21:17-22:03|100% 65% 76%|  46 -  8 = 38 F=|  46 - 39 =  7  A 1400' 20.8| 180  154|
B.U.CENTRAL  | 22:31-22:58|100% 60% 72%|  27 -  8 = 19  F|  28 - 21 =  7  B  750' 18.3|  73  178|
============================================================================================
* = Best Time |  TOTALS :  --   --   --  393 - 83 =310   |530 -365 =165    13400'   -- |1021 2221
    Ever ...  |  AVERAGE: 100% 72% 81%   44 -  9 = 34 F=|  66 - 46 = 21  C 1675' 17.2|  11  278|
^ = Worst Time|  MAXIMUM: 100% 85% 90%   78    14    73  | 108   75   47     2800' 20.8| 208Worst|
    Ever .....|  MINIMUM: 100% 60% 72%   24     5    14  |  28   21    1      750' 13.5|    Dwell|
~~~~~~~~    MEAN DEVIATION:   LOADING   7% LOST DWELL 17sec|LOST LINK 16 sec          11%|Worst   |
      STANDARD DEVIATION:   LOADING   7% LOST DWELL 19sec|LOST LINK 17 sec          16%|Link 740|
-------------------------------------------------------------------------------------------|
                 DISTANCE   CLOCK      ELAPSED  SPEED   | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH    |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<     --       --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500     <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     5:.07:.35 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400     5:.22:.31  14 :.56    10.1   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800     <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700     <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500     <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
--------------------------------------------------------|<<<<<<<<<<<> more               more   |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |     LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES                  ------------------------------------------

    LINK      SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE     ========================================
 THIS TRIP    THAN LOS .. E / C / B
========================================   Riverside train at Park Street 5:05:50
PARK    -   |                          |
BOYL  68%   |    THE       68% 68% 68% |   At B.U. Central, no other outbound train
ARLI  50%   |    LINK      50% 60% 69% |       was in sight.
COPL  68%   |EFFICIENCIES  68% 68% 68% |
AUDI  60%   |   WOULD      60% 60% 66% |
KENM  41%   |    BE        41% 53% 61% |
BLAN  70%   |   ....       70% 70% 70% |
BU.E  64%   |              64% 64% 64% |
BU.C  57%   |              57% 57% 57% |
========================================
      56%    AVERAGE LINK 56% 60% 64%
  GAIN IN RIDERS :
...Link Improvements only  0%  7% 14%
...Link & Dwell Improvements
                           27% 42% 57%
```

```
 B O S T O N  C O L L E G E  OUTBOUND #60  SHK  Rider     AVER. TRIP SPEED =  10.9  LOS D
...THURSDAY, APRIL 4, 1988      Typed by:   SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:50 P.M.        Checked by: SHK  MAY 10, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES    |  STATION    Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST
9   STATIONS|    TIME     |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |     LINK
LRV (two) BV|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH   |DWELL
=============================================================================================
PARK STREET |  53:45-54:27|100%   9% 36%|  42 - 14 = 28  F|  --    --    --      --    -- |131  --
BOYLSTON    |  55:12-55:24|100%  11% 38%|  12 - 10 =  2  A|  45 - 42 =  3  A 1500' 22.7 |  88  202
ARLINGTON   |  57:02-57:25|100%   8% 36%|  23 -  9 = 14  D|  98 - 56 = 42  D 2000' 13.9 |  66  260
COPLEY      |  58:35-59:00|100%   8% 36%|  25 - 11 = 14  D|  70 - 44 = 26  C 1600' 15.6 |112  740
AUDITORIUM 6:01:25-01:39|100%   5% 34%|  14 -  9 =  5  B|145 - 75 = 70  E 2800' 13.2 |  85  225
KENMORE     |  03:54-04:15|100%   9% 36%|  21 -  9 = 12  D|135 - 51 = 84 F= 2250' 11.4 |208  315
BLANDFORD   |  04:58-05:23|100%  11% 38%|  25 -  5 = 20 F=|  43 - 37 =  6  A 1100' 17.4 |  78  147
B.U.EAST    |  06:37-06:58|100%  13% 39%|  21 -  8 = 13  E|  74 - 39 = 35  E 1400' 12.9 |180  154
B.U.CENTRAL |  07:37-08:03|100%  17% 42%|  26 -  8 = 18  F|  39 - 21 = 18  E  750' 13.1 |  73  178
=============================================================================================
* = Best Time  |  TOTALS :  --  --  --  209 - 83 =126    |649 -365 =284    13400'    -- |1021 2221
   Ever ...    |  AVERAGE: 100% 10% 37%   23 -  9 = 14  D|  81 - 46 = 36  D 1675' 14.1 |  11  278
^ = Worst Time|  MAXIMUM: 100% 17% 42%   42   14   28    |145   75   84     2800' 22.7 |208Worst
   Ever .....|  MINIMUM: 100%  5% 34%   12    5    2    |  39   21    3      750' 11.4 |   Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING  2% LOST DWELL  6sec|LOST LINK 23 sec          15%|Worst
     STANDARD DEVIATION:  LOADING  2% LOST DWELL  7sec|LOST LINK 27 sec          33%|Link 740
---------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                    Feet      TIME      TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --       --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     5:.53:.45 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    6:.07:.37  13 :.52    10.9   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0   or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 ----------------------------------------

    LINK      SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE     =======================================
  THIS TRIP   THAN LOS .. E / C / B
=====================================       At Government Center platform :
PARK    -    |                        |      Boston College 5:49:20 out
BOYL  34%    |   THE         34% 34% 34%|    Riverside 49:40 in 50:04 out
ARLI  22%    |   LINK        22% 25% 29%|    Cleveland Circle  50:18 in 50:38 out
COPL  23%    |EFFICIENCIES 23% 23% 28%|      Boston College LRV-1 50:54 in 51:23 out 7 stand
AUDI  19%    |   WOULD       19% 24% 28%|    @ B.U.West  09:53 in  10:06 out
KENM  13%    |    BE         18% 23% 26%|    3 Outbound trains in a row
BLAN  31%    |   ....        31% 31% 31%|    Next arriving train :  LRV-1  10:35 in
BU.E  20%    |               20% 25% 29%|
BU.C  21%    |               21% 26% 30%|
=====================================
     21%    AVERAGE LINK 22% 26% 29%
 GAIN IN RIDERS :
...Link Improvements only  5% 24% 38%
...Link & Dwell Improvements
                          12% 30% 49%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #61  SHK  Rider     AVER. TRIP SPEED =  11.9  LOS C
... THURSDAY, MAY 12, 1988       Typed by:   SHK  MAR.17, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  2:05 P.M.        Checked by: SHK  MAY 10, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders| DWELL TIME   L| STATION-STATION or "LINK"  | WORST
9  STATIONS  |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (one) BV |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
==============================================================================================
PARK STREET  | 09:07-09:37|100%  0% 30%| 30 - 14 = 16  C| --   --   --      --    -- |131  --
BOYLSTON     | 10:50-11:00| 94%  0% 28%| 10*- 10 =  0* A| 73 - 42 = 31  D 1500' 14.0 | 88  202
ARLINGTON    | 12:52-13:19|100%  3% 32%| 27 -  9 = 18  F|112 - 56 = 56  F 2000' 12.2 | 66  260
COPLEY       | 14:27-14:44|100%  0% 30%| 17 - 11 =  6  B| 68 - 44 = 24  C 1600' 16.0 |112  740
AUDITORIUM   | 17:03-17:18| 94%  0% 28%| 15 -  9 =  6  B|139 - 75 = 64  E 2800' 13.7 | 85  225
KENMORE      | 19:00-19:20| 94%  0% 28%| 20 -  9 = 11  D|102 - 51 = 51  F 2250' 15.0 |208  315
BLANDFORD    | 19:57-20:08| 92%  0% 28%| 11 -  5 =  6  D| 37*- 37 =  0* A 1100' 20.3*| 78  147
B.U.EAST     | 21:04-21:15| 90%  0% 27%| 11 -  8 =  3  A| 56 - 39 = 17  C 1400' 17.0 |180  154
B.U.CENTRAL  | 21:51-22:06| 94%  0% 28%| 15 -  8 =  7  C| 36 - 21 = 15  D  750' 14.2 | 73  178
==============================================================================================
* = Best Time  |  TOTALS :  --  --  --  156 - 83 = 73   |623 -365 =258   13400'    -- |1021 2221
   Ever ...    |  AVERAGE:  95%  0% 29%  17 -  9 =  8  C| 78 - 46 = 32  D 1675' 14.7 | 11  278
^ = Worst Time |  MAXIMUM: 100%  3% 32%  30    14    18 |139   75   64    2800' 20.3 |208Worst
   Ever .....  |  MINIMUM:  90%  0% 27%  10     5     0 | 36   21    0     750' 12.2 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING  2% LOST DWELL  5sec|LOST LINK 19 sec          11%|Worst
      STANDARD DEVIATION:  LOADING  1% LOST DWELL  6sec|LOST LINK 21 sec          17%|Link 740
----------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED   SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME        TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --    <:<<<:<<<      --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     2:.09:.07 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400   2:.21:.51  12 :.44    11.9   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 -------------------------------------------

       LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE       =======================================
   THIS TRIP   THAN LOS .. E / C / B
========================================     At Government Center platform :
PARK    -    |                          |     Brigham Circle LRV-1 2:04:30 in 04:49 out
BOYL   17%   |     THE       17% 20% 23%|     Cleveland Circle 05:49 in 06:07 out
ARLI   14%   |    LINK       14% 19% 22%|     Boston College 06:27 in 06:43 out  9 seated
COPL   21%   |EFFICIENCIES   21% 21% 25%|       Another Cleveland Circle train right behind
AUDI   16%   |    WOULD      16% 20% 23%|     At Kenmore, heavily loaded Riverside car (ahead)
KENM   14%   |     BE        14% 19% 22%|
BLAN   28%   |    ....       28% 28% 28%|
BU.E   20%   |               20% 20% 22%|
BU.C   16%   |               16% 18% 21%|
========================================
      17%    AVERAGE LINK 17% 20% 23%
  GAIN IN RIDERS :
...Link Improvements only  0% 18% 35%
...Link & Dwell Improvements
                           0% 15% 31%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #62  SHK  Rider     AVER. TRIP SPEED =  11.2  LOS D
    WEDNESDAY, MAY 18, 1988      Typed by:   SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:20 P.M.         Checked by: SHK  MAY 12, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|   TIME    |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL
==============================================================================================
PARK STREET  | 18:09-18:57|100% 40% 58%| 48 - 14 = 34 F-| --    --    --     --     -- |131  --
BOYLSTON     | 19:49-20:07|100% 40% 58%| 18 - 10 =  8  C|  52 - 42 = 10  B 1500' 19.7 | 88  202
ARLINGTON    | 22:00-22:17|100% 40% 58%| 17 -  9 =  8  C|113 - 56 = 57  F 2000' 12.1 | 66  260
COPLEY       | 23:42-24:13|100% 50% 65%| 31 - 11 = 20  E|  85 - 44 = 41  E 1600' 12.8 |112  740
AUDITORIUM   | 25:48-26:20|100% 50% 65%| 32 -  9 = 23 F-|  95 - 75 = 20  B 2800' 20.1 | 85  225
KENMORE      | 27:50-28:24|100% 30% 51%| 34 -  9 = 25 F-|  90 - 51 = 39  D 2250' 17.0 |208  315
BLANDFORD    | 29:03-30:00|100% 30% 51%| 57 -  5 = 52 F=|  39 - 37 =  2  A 1100' 19.2 | 78  147
B.U.EAST     | 30:51-31:10|100% 30% 51%| 19 -  8 = 11  D|  51 - 39 = 12  B 1400' 18.7 |180  154
B.U.CENTRAL  | 31:36-31:48|100% 30% 51%| 12 -  8 =  4  B|  26 - 21 =  5  B  750' 19.7 | 73  178
==============================================================================================
* = Best Time |  TOTALS :  --   --   --   268 - 83 =185    |551 -365 =186   13400'    -- |1021 2221
    Ever ...  |  AVERAGE: 100% 38% 56%   30 -  9 = 21  F|  69 - 46 = 23  C 1675' 16.6 |  11  278
^ = Worst Time|  MAXIMUM: 100% 50% 65%   57   14   52     |113   75   57      2800' 20.1 |208Worst
    Ever .....|  MINIMUM: 100% 30% 51%   12    5    4     |  26   21    2      750' 12.1 |   Dwell
~~~~~~~~   MEAN DEVIATION:   LOADING   6% LOST DWELL 13sec|LOST LINK 17 sec           15% |Worst
       STANDARD DEVIATION:   LOADING   5% LOST DWELL 14sec|LOST LINK 19 sec           20% |Link 740
----------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME      MPH   |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<     --        --   |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives       --     5:.18:.09 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip     13,400   5:.31:.36  13 :.27    11.2  |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ...   3,800   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
------------------------------------------------------- | <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 -----------------------------------------

    LINK      SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE      ======================================
  THIS TRIP   THAN LOS .. E / C / B
========================================     Arrive at Park Street platform : 5:13:10
PARK    -   |                            |   Cleveland Circle  13:10 out
BOYL  47%   |   THE          47% 47% 47% |   Riverside  arrive empty 14:50 in  15:35 out
ARLI  29%   |   LINK         31% 39% 45% |   Beacon St.  out 15:50
COPL  30%   |EFFICIENCIES    30% 39% 45% |   Brigham Circle  in 16:05
AUDI  51%   |  WOULD         51% 51% 51% |   Boston College :  Express to Kenmore
KENM  37%   |   BE           37% 43% 50% |    16:32 in  17:45 out  arrive empty, leave 12 stand
BLAN  48%   |  ....          48% 48% 48% |                                         40% full
BU.E  39%   |                39% 39% 39% |
BU.C  41%   |                41% 41% 41% |
========================================
     37%    AVERAGE LINK 38% 42% 45%
  GAIN IN RIDERS :
...Link Improvements only  3% 14% 22%
...Link & Dwell Improvements
                           13% 26% 37%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #63  SHK  Rider     AVER. TRIP SPEED =   8.9  LOS F
.... MONDAY, MAY 23, 1988       Typed by:    SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:50 P.M.       Checked by: SHK  MAY 10, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   |  WORST |
9   STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK|
LRV (one) BV|  IN   OUT  |SEATS  TOTAL|sec. TIME TIME S|seç. TIME TIME LOS      MPH  |DWELL   |
==========================================================================================
PARK STREET  | 55:31-56:12|100% 40% 58%|  41 - 14 = 27  E| --    --    --      --     --  |131  --
BOYLSTON     | 57:22-57:42|100% 40% 58%|  20 - 10 = 10  C|  70 - 42 = 28  D 1500' 14.6  | 88  202
ARLINGTON    | 59:24-59:42|100% 35% 55%|  18 -  9 =  9  C|102 - 56 = 46  E 2000' 13.4  | 66  260
COPLEY      6:01:08-01:25|100% 35% 55%|  17 - 11 =  6  B|  86 - 44 = 42  E 1600' 12.7  |112  740
AUDITORIUM   | 04:33-04:54|100% 35% 55%|  21 -  9 = 12  D|188 - 75 =113 F= 2800' 10.2  | 85  225
KENMORE      | 06:33-06:51|100% 35% 55%|  18 -  9 =  9  C|  99 - 51 = 48  E 2250' 15.5  |208  315
BLANDFORD    | 07:43-08:50|100% 40% 58%|  67 -  5 = 62 F=|  52 - 37 = 15  C 1100' 14.4  | 78  147
B.U.EAST     | 11:01-11:16|100% 40% 58%|  15 -  8 =  7  C|131 - 39 = 92 F= 1400'  7.3  |180  154
B.U.CENTRAL  | 12:22-12:43|100% 40% 58%|  21 -  8 = 13  E|  66 - 21 = 45 F=  750'  7.7  | 73  178|
==========================================================================================
* = Best Time  |  TOTALS :   --   --   --   238 - 83 =155   |794 -365 =429    13400'    --  |1021 2221
    Ever ...   |  AVERAGE: 100% 38% 57%   26 -  9 = 17  E|  99 - 46 = 54   F 1675' 11.5  |  11  278|
^ = Worst Time|  MAXIMUM: 100% 40% 58%   67    14    62    |188    75  113      2800' 15.5  |208Worst|
    Ever .....|  MINIMUM: 100% 35% 55%   15     5     6    | 52    21   15       750'  7.3  |   Dwell|
~~~~~~~~   MEAN DEVIATION:   LOADING   2% LOST DWELL 14sec|LOST LINK 25 sec           22%|Worst   |
      STANDARD DEVIATION:   LOADING   1% LOST DWELL 17sec|LOST LINK 31 sec           31%|Link 740|
------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     5:.55:.31 <<< :<<<    --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   6:.12:.22  16 :.51    9.0   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<> more                more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES               ---------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE       TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE        ========================================
   THIS TRIP   THAN LOS .. E / C / B           Arrive at Government Center platform : 5:42:00
=======================================        Cleveland Circle 42:10 in  43:10 out
PARK    -    |                        |         Cleveland Circle LRV-1 44:10 in  44:48 out
BOYL  35%    |    THE      35% 39% 45%|         Brigham Circle LRV-2(7) 45:25 in  46:00 out
ARLI  32%    |   LINK      32% 39% 45%|         Riverside  LRV-1 (7) 46:20 in  48:02 out
COPL  28%    |EFFICIENCIES 28% 37% 42%|             held in station, leave 48:25
AUDI  22%    |   WOULD     29% 37% 42%|         Cleveland Circle LRV-1 (7) 49:00 in 49:45 out
KENM  28%    |    BE       28% 37% 42%|         Riverside LRV-2   50:37 in
BLAN  39%    |   ....      39% 39% 42%|         Boston College LRV-1 50:50 in  51:50 doors closed
BU.E  17%    |             31% 39% 45%|           52:24 doors open again 52:50 doors closed, leave
BU.C  18%    |             31% 39% 45%|            7 standees  ..... Riverside train immediately b
=======================================        @ B.U.West  12:22 in  12:43 out
      26%    AVERAGE LINK 31% 38% 44%          Next train @ B.U.West  12:50 in  LRV-1
  GAIN IN RIDERS :                              Next train @ B.U.West  13:40 in 13:55 out LRV-1
...Link Improvements only 19% 46% 69%          Next train  non-stop  13:55  LRV-2 right behind
...Link & Dwell Improvements
                            24% 47% 69%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #64  SHK  Rider      AVER. TRIP SPEED =  10.5  LOS D
... THURSDAY, JUNE 9, 1988      Typed by:    SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:10 P.M.        Checked by: SHK  MAY 10, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |   STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    | WORST
9  STATIONS  |    TIME     |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST.  SPEED  |    LINK
LRV (two) BV |  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS       MPH  |DWELL
=============================================================================================
PARK STREET  | 12:19-13:25|100% 21% 45%| 66 - 14 = 52 F=| --    --   --     --      --  |131   --
BOYLSTON     | 14:47-15:05|100% 24% 47%| 18 - 10 =  8  C| 82 - 42 = 40  E 1500' 12.5  | 88  202
ARLINGTON    | 17:10-17:37|100% 22% 45%| 27 -  9 = 18  F|125 - 56 = 69 F- 2000' 10.9  | 66  260
COPLEY       | 18:27-19:05|100% 36% 55%| 38 - 11 = 27 F-| 50 - 44 =  6  A 1600' 21.8  |112  740
AUDITORIUM   | 21:03-21:38|100% 38% 57%| 35 -  9 = 26 F-|118 - 75 = 43  C 2800' 16.2  | 85  225
KENMORE      | 23:32-23:59|100% 36% 55%| 27 -  9 = 18  F|114 - 51 = 63 F- 2250' 13.5  |208  315
BLANDFORD    | 24:40-25:01|100% 40% 58%| 21 -  5 = 16 F=| 41 - 37 =  4  A 1100' 18.3  | 78  147
B.U.EAST     | 25:46-26:04|100% 40% 58%| 18 -  8 = 10  D| 45 - 39 =  6  A 1400' 21.2  |180  154
B.U.CENTRAL  | 26:40-27:01|100% 30% 51%| 21 -  8 = 13  E| 36 - 21 = 15  D  750' 14.2  | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  271 - 83 =188  |611 -365 =246    13400'   --  |1021 2221
   Ever ...   |  AVERAGE: 100% 32% 52%   30 -  9 = 21  F| 76 - 46 = 31  D 1675' 15.0  | 11  278
^ = Worst Time|  MAXIMUM: 100% 40% 58%   66   14   52   |125   75   69     2800' 21.8  |208Worst
   Ever ..... |  MINIMUM: 100% 21% 45%   18    5    8   | 36   21    4      750' 10.9  |   Dwell
~~~~~~~~~ MEAN DEVIATION:   LOADING  5% LOST DWELL 11sec|LOST LINK 23 sec          20% |Worst
     STANDARD DEVIATION:   LOADING  5% LOST DWELL 13sec|LOST LINK 25 sec          30% |Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<     --       --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500     <:<<<:<<< <<< :<<<   <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     5:.12:.19 <<< :<<<     --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400     5:.26:.40  14 :.21    10.5  |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800     <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700     <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500     <:<<<:<<< <<< :<<<   <<<<<  |  DWELL 3.0   or  => F=  <= 1.5   or  LINK
-------------------------------------------------------|<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |    LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                ----------------------------------------

     LINK        SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY     IMPROVED SO NONE WERE WORSE      ========================================
  THIS TRIP      THAN LOS .. E / C / B
===========================================
PARK    -    |                              |
BOYL  23%    |    THE       23% 30% 35%     |
ARLI  21%    |    LINK      25% 31% 36%     |
COPL  40%    |EFFICIENCIES  40% 40% 40%     |
AUDI  35%    |   WOULD      35% 35% 42%     |
KENM  26%    |    BE        30% 38% 44%     |
BLAN  50%    |   ....       50% 50% 50%     |
BU.E  50%    |              50% 50% 50%     |
BU.C  34%    |              34% 39% 45%     |
===========================================
     31%    AVERAGE LINK 33% 37% 42%
  GAIN IN RIDERS :
...Link Improvements only  6% 19% 35%
...Link & Dwell Improvements
                          16% 34% 53%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #65  SHK  Rider     AVER. TRIP SPEED =  11.0  LOS D
.... FRIDAY, JULY 8, 1988        Typed by:    SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:55 P.M.        Checked by:  SHK  MAY 12, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST
9   STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT|SEATS   TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
==========================================================================================
PARK STREET | 57:28-58:11|100%   1% 31%| 43 - 14 = 29  F|  --   --   --      --    -- |131  --
BOYLSTON    | 59:27-59:50|100%   0% 30%| 23 - 10 = 13  D| 76 - 42 = 34  E 1500' 13.5 | 88  202|
ARLINGTON  6:02:38-03:01|  88%   0% 27%| 23 -  9 = 14  D|168 - 56 =112 F= 2000'  8.1 | 66  260|
COPLEY      | 03:59-04:16|  92%   0% 28%| 17 - 11 =  6  B| 58 - 44 = 14  B 1600' 18.8 |112  740|
AUDITORIUM  | 06:22-06:42|  80%   0% 24%| 20 -  9 = 11  D|126 - 75 = 51  D 2800' 15.2 | 85  225|
KENMORE     | 08:11-08:27|  48%   0% 14%| 16 -  9 =  7  B| 89 - 51 = 38  D 2250' 17.2 |208  315|
BLANDFORD   | 09:11-09:25|  56%   0% 17%| 14 -  5 =  9  E| 44 - 37 =  7  A 1100' 17.0 | 78  147|
B.U.EAST    | 10:19-10:33|  56%   0% 17%| 14 -  8 =  6  B| 54 - 39 = 15  B 1400' 17.7 |180  154|
B.U.CENTRAL | 11:10-11:19|  56%   0% 17%|  9 -  8 =  1  A| 37 - 21 = 16  D  750' 13.8 | 73  178|
==========================================================================================
* = Best Time |  TOTALS :  --   --   --  179 - 83 = 96   |652 -365 =287   13400'   --  |1021 2221
   Ever ...   |  AVERAGE:  75%  0%  23%  20 -  9 = 11  C | 82 - 46 = 36  D 1675' 14.0 | 11  278|
^ = Worst Time|  MAXIMUM: 100%  1%  31%  43    14    29  |168   75  112     2800' 18.8 |208Worst|
   Ever .....|  MINIMUM:  48%  0%  14%   9     5     1  | 37   21    7      750'  8.1 |   Dwell|
~~~~~~~~  MEAN DEVIATION:  LOADING   7% LOST DWELL   6sec|LOST LINK 23 sec          18%|Worst
      STANDARD DEVIATION:  LOADING   6% LOST DWELL   7sec|LOST LINK 32 sec          26%|Link 740
-----------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --       --  |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives      --     5:.57:.28 <<< :<<<     --   |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip    13,400    6:.11:.10  13 :.42    11.0  |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <=  1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <=  1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F=  <=  1.5  or  LINK
------------------------------------------------------| <<<<<<<<<<<> more              more    |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES               ------------------------------------------

    LINK      SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE      ========================================
  THIS TRIP   THAN LOS .. E / C / B
========================================    Arrive at Government Center platform : 5:50:00
PARK    -    |                          |   Boston College LRV-1  50:40 out
BOYL  17%    |    THE       17% 21% 24% |   Riverside  51:00 in   51:40 out
ARLI  10%    |    LINK      16% 20% 23% |   Cleveland Circle  52:04 in   52:38 out
COPL  20%    |EFFICIENCIES  20% 20% 20% |   Brigham Circle  52:58 in 53:25 out
AUDI  17%    |   WOULD      17% 19% 22% |   Riverside LRV-2  54:04 in 54:28 out
KENM  14%    |    BE        14% 16% 18% |   Boston College LRV-2 55:12 in empty 55:42 out
BLAN  12%    |   ....       12% 12% 12% |       8 standees    Cleveland Circle right behind
BU.E  12%    |              12% 12% 12% |   @B.U.West  13:20 in   13:33 out  13 seated
BU.C  10%    |              10% 11% 13% |     no BC LRVs in sight
========================================
     13%    AVERAGE LINK 14% 16% 18%
  GAIN IN RIDERS :
...Link Improvements only  8% 23% 38%
...Link & Dwell Improvements
                          16% 29% 43%
```

B O S T O N C O L L E G E OUTBOUND #66 SHK Rider AVER. TRIP SPEED = 13.3 LOS B
... TUESDAY, AUGUST 2, 1988 Typed by: SHK MAR.19, 89 Previous Worst = 4.8 LOS F=
..Begin Trip 9:35 P.M. Checked by: SHK MAY 12, 89 Previous Best = 17.6 LOS A

==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================

2.5 MILES 9 STATIONS LRV (two) BV	STATION TIME IN OUT	Max166 Riders 50\ SEATS	STAND	TOTAL	DWELL TIME MEAS sec.	BEST TIME	LOST TIME	LOS	STATION-STATION or "LINK" MEAS sec.	BEST TIME	LOST TIME	LOS	DIST.	SPEED MPH	WORST DWELL	LINK
PARK STREET	35:50-36:10	12%	0%	4%	20	14	6	B	--	--	--		--	--	131	--
BOYLSTON	36:55-37:06	12%	0%	4%	11	10	1	A	45	42	3	A	1500'	22.7	88	202
ARLINGTON	38:44-38:58	24%	0%	7%	14	9	5	B	98	56	42	D	2000'	13.9	66	260
COPLEY	39:51-40:17	24%	0%	7%	26	11	15	D	53	44	9	B	1600'	20.6	112	740
AUDITORIUM	42:03-42:18	24%	0%	7%	15	9	6	B	106	75	31	C	2800'	18.0	85	225
KENMORE	43:46-43:57	24%	0%	7%	11	9	2	A	88	51	37	D	2250'	17.4	208	315
BLANDFORD	44:50-45:13	24%	0%	7%	23	5	18	F=	53	37	16	C	1100'	14.2	78	147
B.U.EAST	46:33-46:46	24%	0%	7%	13	8	5	B	80	39	41	F	1400'	11.9	180	154
B.U.CENTRAL	47:13-47:28	20%	0%	6%	15	8	7	C	27	21	6	B	750'	18.9	73	178
* = Best Time	TOTALS :	--	--	--	148	83	65		550	365	185		13400'	--	1021	2221
Ever ...	AVERAGE:	21%	0%	6%	16	9	7	B	69	46	23	C	1675'	16.6	11	278
^ = Worst Time	MAXIMUM:	24%	0%	7%	26	14	18		106	75	42		2800'	22.7	208	Worst
Ever	MINIMUM:	12%	0%	4%	11	5	1		27	21	3		750'	11.9		Dwell

MEAN DEVIATION: LOADING 1% LOST DWELL 5sec | LOST LINK 15 sec 16% | Worst
STANDARD DEVIATION: LOADING 1% LOST DWELL 5sec | LOST LINK 15 sec 27% | Link 740

	DISTANCE Feet	CLOCK TIME	ELAPSED TIME	SPEED MPH
Leave Door ...	--	<:<<<:<<<	--	--
Arrive Platform	2,500	<:<<<:<<<	<<< :<<<	<<<<<
Train Arrives	--	9:.35:.50	<<< :<<<	--
Transit Trip	13,400	9:.47:.13	11 :.23	13.3
Arrive Door ...	3,800	<:<<<:<<<	<<< :<<<	<<<<<
Total Trip ...	19,700	<:<<<:<<<	<<< :<<<	<<<<<
Straight Line	12,500	<:<<<:<<<	<<< :<<<	<<<<<

TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge
LRV CAPACITY : 50 SEATS + 116 STANDEES

LOST TIME/BEST TIME	LOS	LOST TIME/BEST
DWELL .0 - .4 =>	A	<= .0 - .2 LINK
DWELL .4 - .8 =>	B	<= .2 - .4 LINK
DWELL .8 -1.2 =>	C	<= .4 - .6 LINK
DWELL 1.2 -1.6 =>	D	<= .6 - .8 LINK
DWELL 1.6 -2.0 =>	E	<= .8 -1.0 LINK
DWELL 2.0 -2.4 =>	F	<= 1.0 -1.2 LINK
DWELL 2.4 -3.0 =>	F-	<= 1.2 -1.5 LINK
DWELL 3.0 or =>	F=	<= 1.5 or LINK
<<<<<<<<<<<> more		more

LEVEL OF SERVICE CRITERIA

LINK EFFICIENCY THIS TRIP		SUPPOSE ALL LINK TIMES WERE IMPROVED SO NONE WERE WORSE THAN LOS ..	E	C	B
PARK	-				
BOYL	4%	THE	4%	4%	4%
ARLI	2%	LINK	2%	3%	3%
COPL	6%	EFFICIENCIES	6%	6%	6%
AUDI	5%	WOULD	5%	5%	5%
KENM	4%	BE	4%	5%	5%
BLAN	5%	.....	5%	5%	5%
BU.E	3%		4%	5%	5%
BU.C	5%		5%	5%	5%
	4%	AVERAGE LINK	4%	4%	5%

GAIN IN RIDERS :
...Link Improvements only 0% 0% 25%
...Link & Dwell Improvements 0% 6% 16%

TRIP NOTES -- OTHER TRAINS AND COMMENTS

Arrived at Government Center platform 9:25 PM
Riverside LRV-1 25:48 out full
Cleveland Circle LRV-1 25:59 in 26:25 out
Riverside LRV-1 28:45 in 29:50 out
Brigham Circle LRV-1 30:18 in 30:42 out
Cleveland Circle LRV-1 33:38 in 34:07 out
(I took this train to Park St., 35:40 in).

I was riding in the trailing unit of a dual LRV and noticed that the doors did not open at either B.U. East or Central. Expecting that the B.U.West stop might be skipped too, I walked to the front of the car. The driver told me to pull the cord, but it was not working. She got up, pulled the other cord and then used the phone to call the driver ahead to stop. Nevertheless, the train went sailing right through B.U.West and finally stopped at Amory Street. No apologies, no explanations.

```
 B O S T O N  C O L L E G E   OUTBOUND #67  SHK  Rider     AVER. TRIP SPEED =  10.6  LOS D
.. WEDNESDAY, AUGUST 10, 1988   Typed by:   SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:40 P.M.       Checked by: SHK  MAY 12, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  |  WORST  |
9  STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED|     LINK|
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL    |
===========================================================================================|
PARK STREET |  38:10-38:50| 50%  0% 15%| 40 - 14 = 26  E|  --   --   --      --    -- |131  --  |
BOYLSTON    |  40:04-40:29| 85%  0% 26%| 25 - 10 = 15  D| 74 - 42 = 32  D 1500' 13.8 | 88  202 |
ARLINGTON   |  42:56-43:12|100%  3% 32%| 16 -  9 =  7  B|147 - 56 = 91 F= 2000'  9.3 | 66  260 |
COPLEY      |  44:44-45:20|100% 15% 41%| 36 - 11 = 25  F| 92 - 44 = 48  F 1600' 11.9 |112  740 |
AUDITORIUM  |  47:17-47:40|100% 11% 38%| 23 -  9 = 14  D|117 - 75 = 42  C 2800' 16.3 | 85  225 |
KENMORE     |  49:18-49:40|100% 11% 38%| 22 -  9 = 13  D| 98 - 51 = 47  E 2250' 15.7 |208  315 |
BLANDFORD   |  50:21-50:40|100% 24% 47%| 19 -  5 = 14 F-| 41 - 37 =  4  A 1100' 18.3 | 78  147 |
B.U.EAST    |  51:29-51:54|100% 24% 47%| 25 -  8 = 17  F| 49 - 39 = 10  B 1400' 19.5 |180  154 |
B.U.CENTRAL |  52:22-52:38|100% 24% 47%| 16 -  8 =  8  C| 28 - 21 =  7  B  750' 18.3 | 73  178 |
============================================================================================
* = Best Time |  TOTALS :  --  --  --  222 - 83 =139   |646 -365 =281   13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  93% 12% 37%  25 -  9 = 15  E| 81 - 46 = 35  D 1675' 14.1 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 24% 47%  40    14    26 |147   75   91     2800' 19.5 |208Worst
    Ever .....|  MINIMUM:  50%  0% 15%  16     5     7 | 28   21    4      750'  9.3 |   Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING  9% LOST DWELL   5sec|LOST LINK 22 sec           20%|Worst
      STANDARD DEVIATION:  LOADING 10% LOST DWELL   6sec|LOST LINK 27 sec           29%|Link 740
-------------------------------------------------------------------------------------------
               DISTANCE   CLOCK     ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                 Feet      TIME      TIME      MPH   |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...   --     <:<<<:<<<     --        --   |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform 2,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives    --     5:.38:.10 <<< :<<<    --     |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip    13,400  5:.52:.22  14 :.12   10.6    |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700  <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 =>  F- <= 1.2 -1.5 LINK
Straight Line   12,500  <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  =>  F= <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<<> more           more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA      |
LRV CAPACITY :  50 SEATS + 116 STANDEES              ---------------------------------------

    LINK     SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY  IMPROVED SO NONE WERE WORSE     =======================================
  THIS TRIP  THAN LOS .. E / C / B
========================================
PARK    -   |                          |
BOYL   9%   |    THE        9% 10% 12% |
ARLI  10%   |    LINK      14% 17% 20% |
COPL  15%   | EFFICIENCIES 17% 21% 25% |
AUDI  26%   |    WOULD     26% 26% 32% |
KENM  20%   |     BE       20% 25% 29% |
BLAN  34%   |    ....      34% 34% 34% |
BU.E  37%   |              37% 37% 37% |
BU.C  35%   |              35% 35% 35% |
========================================
     21%    AVERAGE LINK 23% 26% 29%
 GAIN IN RIDERS :
...Link Improvements only 10% 24% 38%
...Link & Dwell Improvements
                          12% 28% 46%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #68  SHK  Rider     AVER. TRIP SPEED =  10.0  LOS E
..WEDNESDAY, AUGUST 17, 1988     Typed by:    SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:10 P.M.         Checked by: SHK  MAY 12, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION    Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS  |   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) BV  |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
=============================================================================================
PARK STREET   | 10:52-11:53|100% 70% 79%|  61 - 14 = 47 F=|  --   --   --     --     --  |131  --
BOYLSTON      | 13:22-13:52|100% 80% 86%|  30 - 10 = 20  F|  89 - 42 = 47  F 1500' 11.5  | 88  202
ARLINGTON     | 15:44-16:22|100% 90% 93%|  38 -  9 = 29 F=| 112 - 56 = 56  F 2000' 12.2  | 66  260
COPLEY        | 17:12-18:04|100% 90% 93%|  52 - 11 = 41 F=|  50 - 44 =  6  A 1600' 21.8  |112  740
AUDITORIUM    | 19:44-20:22|100% 90% 93%|  38 -  9 = 29 F=| 100 - 75 = 25  B 2800' 19.1  | 85  225
KENMORE       | 22:00-23:02|100% 70% 79%|  62 -  9 = 53 F=|  98 - 51 = 47  E 2250' 15.7  |208  315
BLANDFORD     | 23:42-24:07|100% 70% 79%|  25 -  5 = 20 F=|  40 - 37 =  3  A 1100' 18.8  | 78  147
B.U.EAST      | 24:57-25:20|100% 70% 79%|  23 -  8 = 15  E|  50 - 39 = 11  B 1400' 19.1  |180  154
B.U.CENTRAL   | 25:55-26:14|100% 70% 79%|  19 -  8 = 11  D|  35 - 21 = 14  D  750' 14.6  | 73  178
=============================================================================================
* = Best Time  |  TOTALS :   --  --  --   348 - 83 =265   |574 -365 =209    13400'   --   |1021 2221
    Ever ...   |  AVERAGE: 100% 78% 84%   39 -  9 = 29 F= | 72 - 46 = 26  C 1675' 15.9   | 11  278|
^ = Worst Time |  MAXIMUM: 100% 90% 93%   62    14    53  |112    75   56    2800' 21.8  |208Worst
    Ever .....|  MINIMUM: 100% 70% 79%   19     5    11  | 35    21    3     750' 11.5  |   Dwell
---------    MEAN DEVIATION:   LOADING   7% LOST DWELL 13sec|LOST LINK 18 sec        17%|Worst
        STANDARD DEVIATION:   LOADING   6% LOST DWELL 14sec|LOST LINK 20 sec        25%|Link 740
-------------------------------------------------------------------------------------------
                  DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                    Feet      TIME        TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<     --       --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<    <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --      5:.10:.52 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400    5:.25:.55  15 :.03    10.0   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800   <:<<<:<<< <<< :<<<    <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700   <:<<<:<<< <<< :<<<    <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500   <:<<<:<<< <<< :<<<    <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
--------------------------------------------------------|<<<<<<<<<<<> more           more      |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |     LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES          ----------------------------------------------

    LINK       SUPPOSE ALL LINK TIMES WERE       TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY    IMPROVED SO NONE WERE WORSE       ========================================
 THIS TRIP     THAN LOS .. E / C / B
========================================      Boeing-Vertol LRV-2.  It was a hot day and
PARK    -   |                            |           the air conditioning was not working.
BOYL  37%   |    THE         42% 53% 61% |
ARLI  43%   |   LINK         43% 57% 66% |
COPL  82%   |EFFICIENCIES    82% 82% 82% |
AUDI  70%   |   WOULD        70% 70% 70% |
KENM  48%   |    BE          48% 62% 72% |
BLAN  73%   |   ....         73% 73% 73% |
BU.E  62%   |                62% 62% 62% |
BU.C  47%   |                47% 53% 61% |
========================================
     53%    AVERAGE LINK 54% 62% 67%
  GAIN IN RIDERS :
...Link Improvements only  2% 17% 26%
...Link & Dwell Improvements
                          19% 39% 55%
 B O S T O N   C O L L E G E   OUTBOUND #69  SHK  Rider     AVER. TRIP SPEED =   9.3  LOS E
..THURSDAY, SEPTEMBER 15, 1988  Typed by:    SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:20 P.M.        Checked by: SHK  MAY 13, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=============================================================================================|
PARK STREET  | 19:30-20:18|100% 70% 79%|  48 - 14 = 34 F-|  --   --   --    --     --  |131  -- 
BOYLSTON     | 21:57-22:18|100% 75% 83%|  21 - 10 = 11  C|  99 - 42 = 57 F- 1500' 10.3 | 88  202
ARLINGTON    | 24:40-25:08|100% 90% 93%|  28 -  9 = 19  F| 142 - 56 = 86 F= 2000'  9.6 | 66  260
COPLEY       | 26:52-27:36|100% 90% 93%|  44 - 11 = 33 F=| 104 - 44 = 60 F- 1600' 10.5 |112  740
AUDITORIUM   | 29:42-30:15|100% 90% 93%|  33 -  9 = 24 F-| 126 - 75 = 51  D 2800' 15.2 | 85  225
KENMORE      | 31:52-32:34|100% 50% 65%|  42 -  9 = 33 F=|  97 - 51 = 46  E 2250' 15.8 |208  315
BLANDFORD    | 33:21-33:41|100% 75% 83%|  20 -  5 = 15 F=|  47 - 37 = 10  B 1100' 16.0 | 78  147
B.U.EAST     | 34:53-35:13|100% 80% 86%|  20 -  8 = 12  D|  72 - 39 = 33  E 1400' 13.3 |180  154
B.U.CENTRAL  | 35:46-36:12|100% 85% 90%|  26 -  8 = 18  F|  33 - 21 = 12  C  750' 15.5 | 73  178
==============================================================================================
* = Best Time |  TOTALS :  --   --   --   282 - 83 =199   |720 -365 =355    13400'   --  |1021 2221
    Ever ...  |  AVERAGE: 100% 78% 85%   31 -  9 = 22 F-|  90 - 46 = 44  E 1675' 12.7 |  11  278|
^ = Worst Time|  MAXIMUM: 100% 90% 93%   48   14   34    | 142   75   86    2800' 16.0 |208Worst|
    Ever .....|  MINIMUM: 100% 50% 65%   20    5   11    |  33   21   10     750'  9.6 |   Dwell|
~~~~~~~~   MEAN DEVIATION:  LOADING   8% LOST DWELL   9sec|LOST LINK 20 sec           17%|Worst   |
       STANDARD DEVIATION:  LOADING   9% LOST DWELL   9sec|LOST LINK 24 sec           22%|Link 740|
---------------------------------------------------------------------------------------------|
                  DISTANCE   CLOCK      ELAPSED   SPEED  |  LOST TIME/BEST TIME    LOS LOST TIME/BEST
                    Feet      TIME       TIME      MPH   |    DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --     <:<<<:<<<      --        --    |    DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<    |    DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     6:.19:.30 <<< :<<<     --     |    DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400   6:.35:.46  16 :.16    9.3     |    DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800   <:<<<:<<< <<< :<<<   <<<<<    |    DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700   <:<<<:<<< <<< :<<<   <<<<<    |    DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500   <:<<<:<<< <<< :<<<   <<<<<    |    DWELL 3.0   or  => F=  <= 1.5   or  LINK
---------------------------------------------------------| <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge         |      LEVEL OF SERVICE CRITERIA       |
LRV CAPACITY :  50 SEATS + 116 STANDEES                   ------------------------------------------

    LINK       SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY   IMPROVED SO NONE WERE WORSE     =======================================
  THIS TRIP    THAN LOS .. E / C / B
=====================================       Ball game at Fenway Park
PARK    -   |                          |
BOYL  34%   |     THE        42% 53% 61%|    @ B.U. Central :
ARLI  33%   |    LINK        44% 55% 64%|    LRV-1  36:52 in  37:05
COPL  39%   |EFFICIENCIES    49% 62% 72%|    LRV-1 37:22 out
AUDI  55%   |    WOULD       55% 62% 72%|       (17 seconds headway)
KENM  49%   |     BE         49% 62% 72%|
BLAN  51%   |    ....        51% 51% 51%|    6:44 B.U. Rotary clogged, queue from Comm. Ave.
BU.E  45%   |                45% 55% 64%|       signal around rotary.
BU.C  55%   |                55% 55% 66%|
=====================================
    43%    AVERAGE LINK 48% 57% 66%
  GAIN IN RIDERS :
...Link Improvements only 12% 33% 53%
...Link & Dwell Improvements
                         19% 42% 66%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #70  SHK  Rider     AVER. TRIP SPEED =  10.3  LOS D
... MONDAY, SEPTEMBER 19, 1988  Typed by:   SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:55 P.M.        Checked by: SHK  MAY 13, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   |  WORST
9  STATIONS|   TIME    |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
===========================================================================================|
PARK STREET | 54:21-55:44| 68%  0% 20%| 83 - 14 = 69 F=| --   --   --     --     -- |131  -- |
BOYLSTON    | 56:41-57:03| 96%  0% 29%| 22 - 10 = 12  D| 57 - 42 = 15  B 1500' 17.9 | 88  202|
ARLINGTON   | 58:44-59:13|100% 10% 37%| 29 -  9 = 20  F|101 - 56 = 45  E 2000' 13.5 | 66  260|
COPLEY     5:00:09-00:37|100% 15% 41%| 28 - 11 = 17  D| 56 - 44 = 12  B 1600' 19.5 |112  740|
AUDITORIUM  | 02:16-02:39|100% 20% 44%| 23 -  9 = 14  D| 99 - 75 = 24  B 2800' 19.3 | 85  225|
KENMORE     | 04:15-04:43|100% 25% 48%| 28 -  9 = 19  F| 96 - 51 = 45  E 2250' 16.0 |208  315|
BLANDFORD   | 05:25-06:22|100% 23% 46%| 57 -  5 = 52 F=| 42 - 37 =  5  A 1100' 17.9 | 78  147|
B.U.EAST    | 07:24-08:18|100% 50% 65%| 54 -  8 = 46 F=| 62 - 39 = 23  C 1400' 15.4 |180  154|
B.U.CENTRAL | 09:00-09:32|100% 75% 83%| 32 -  8 = 24 F=| 42 - 21 = 21  F  750' 12.2 | 73  178|
============================================================================================
* = Best Time |  TOTALS :  --   --   --  356 - 83 =273 |555 -365 =190   13400'   --  |1021 2221
    Ever ...  |  AVERAGE:  96% 24% 46%  40 -  9 = 30 F=| 69 - 46 = 24  C 1675' 16.5  | 11  278|
^ = Worst Time|  MAXIMUM: 100% 75% 83%  83   14   69   |101   75   45    2800' 19.5  |208Worst|
    Ever .....|  MINIMUM:  68%  0% 20%  22    5   12   | 42   21    5     750' 12.2  |   Dwell|
~~~~~~~~  MEAN DEVIATION:  LOADING 15% LOST DWELL 19sec|LOST LINK 11 sec         12% |Worst   |
     STANDARD DEVIATION:  LOADING 18% LOST DWELL 19sec|LOST LINK 14 sec         16% |Link 740|
-------------------------------------------------------------------------------------------|
                DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --       --  |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 => .C  <=  .4 - .6 LINK
Train Arrives      --     4:.54:.21 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   5:.09:.00  14 :.39   10.3   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<<> more              more   |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES               ------------------------------------------

   LINK      SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY  IMPROVED SO NONE WERE WORSE      ========================================
 THIS TRIP   THAN LOS .. E / C / B
=====================================       Arrive at Park Street platform : 4:53
PARK    -   |                          |     Riverside out  53:50
BOYL  15%   |    THE        15% 15% 15%|     Cleveland Circle  53:50 in
ARLI  16%   |   LINK        16% 19% 22%|     @ B.U.Central  next train 12:30 in  12:52 out
COPL  29%   |EFFICIENCIES   29% 29% 29%|        LRV-2  Section #1 5 stand, #2 100% seats
AUDI  31%   |   WOULD       31% 31% 31%|           Section #3 50% seated  #4  33% seated
KENM  23%   |    BE         23% 29% 34%|        headway 3:20 or 200 seconds
BLAN  42%   |   ....        42% 42% 42%|           approx. 75 riders on the LRV-2
BU.E  29%   |               29% 29% 35%|             Flow rate of 1350 passengers per hour
BU.C  33%   |               33% 43% 50%|              on Boston College branch
=====================================
     30%     AVERAGE LINK 30% 33% 36%
  GAIN IN RIDERS :
...Link Improvements only  0% 10% 20%
...Link & Dwell Improvements
                           19% 33% 49%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #71  SHK  Rider    AVER. TRIP SPEED =  11.2  LOS D
... MONDAY, SEPTEMBER 29, 1988  Typed by:   SHK  MAR.24, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:05 P.M.       Checked by: SHK  MAY 13, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9  STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
===========================================================================================
PARK STREET | 05:20-05:53|100% 15% 41%| 33 - 14 = 19  D| --   --   --     --     -- |131  -- |
BOYLSTON    | 06:40-06:57|100% 25% 48%| 17 - 10 =  7  B| 47 - 42 =  5  A 1500' 21.8 | 88  202|
ARLINGTON   | 08:30-08:59|100% 25% 48%| 29 -  9 = 20  F| 93 - 56 = 37  D 2000' 14.7 | 66  260|
COPLEY      | 11:06-11:34|100% 28% 50%| 28 - 11 = 17  D|127 - 44 = 83 F= 1600'  8.6 |112  740|
AUDITORIUM  | 13:10-13:32|100% 35% 55%| 22 -  9 = 13  D| 96 - 75 = 21  B 2800' 19.9 | 85  225|
KENMORE     | 14:58-15:22|100% 40% 58%| 24 -  9 = 15  E| 86 - 51 = 35  D 2250' 17.8 |208  315|
BLANDFORD   | 16:05-16:40|100% 40% 58%| 35 -  5 = 30 F=| 43 - 37 =  6  A 1100' 17.4 | 78  147|
B.U.EAST    | 17:52-18:22|100% 40% 58%| 30 -  8 = 22 F-| 72 - 39 = 33  E 1400' 13.3 |180  154|
B.U.CENTRAL | 18:51-19:16|100% 40% 58%| 25 -  8 = 17  F| 29 - 21 =  8  B  750' 17.6 | 73  178|
============================================================================================
* = Best Time |  TOTALS :  --   --   --  243 - 83 =160   |593 -365 =228   13400'   -- |1021 2221
   Ever ...   |  AVERAGE: 100% 32% 53%  27 -  9 = 18  E | 74 - 46 = 29  D 1675' 15.4 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 40% 58%  35    14    30  |127   75   83     2800' 21.8 |208Worst
   Ever .....|  MINIMUM: 100% 15% 41%  17     5     7  | 29   21    5      750'  8.6 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING  6% LOST DWELL  5sec|LOST LINK 19 sec          20%|Worst
      STANDARD DEVIATION:  LOADING  6% LOST DWELL  6sec|LOST LINK 24 sec          30%|Link 740
-------------------------------------------------------------------------------------------
              DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                Feet      TIME       TIME    MPH   |    DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...   --    <:<<<:<<<      --      --   |    DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500  <:<<<:<<< <<< :<<<  <<<<<   |    DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives    --    5:.05:.20 <<< :<<<    --    |    DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400  5:.18:.51  13 :.31   11.2   |    DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ... 3,800  <:<<<:<<< <<< :<<<  <<<<<   |    DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ... 19,700  <:<<<:<<< <<< :<<<  <<<<<   |    DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line  12,500  <:<<<:<<< <<< :<<<  <<<<<   |    DWELL 3.0  or  => F=  <= 1.5  or  LINK
---------------------------------------------------| <<<<<<<<<<<> more            more     |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge   |       LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES          -----------------------------------------

    LINK      SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE     ======================================
  THIS TRIP   THAN LOS .. E / C / B
========================================    Riverside LRV-3 out 5:04:58, with bad wheel
PARK   -     |                            |
BOYL  37%    |   THE        37% 37% 37%   |
ARLI  29%    |   LINK       29% 32% 37%   |
COPL  17%    |EFFICIENCIES  25% 32% 37%   |
AUDI  39%    |   WOULD      39% 39% 39%   |
KENM  33%    |    BE        33% 37% 42%   |
BLAN  50%    |   ....       50% 50% 50%   |
BU.E  31%    |              31% 39% 45%   |
BU.C  42%    |              42% 42% 42%   |
========================================
     33%    AVERAGE LINK 35% 39% 42%
  GAIN IN RIDERS :
...Link Improvements only  6% 18% 27%
...Link & Dwell Improvements
                          15% 28% 43%
```

```
 B O S T O N·C O L L E G E   OUTBOUND #72  SHK  Rider     AVER. TRIP SPEED =  10.2  LOS D
... THURSDAY, OCTOBER 20, 1988  Typed by:   SHK  MAR.24, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:00 P.M.        Checked by: SHK  MAY 13, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989=================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST |
9   STATIONS|   TIME    .|50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |   LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL  |
=============================================================================================
PARK STREET | 58:47-59:35| 75%  0% 23%| 48 - 14 = 34 F-| --   --   --    --      --  |131  --
BOYLSTON   5:00:50-01:07| 75%  3% 25%| 17 - 10 =  7  B| 75 - 42 = 33  D 1500' 13.6  | 88  202
ARLINGTON   | 03:20-03:38| 85%  3% 28%| 18 -  9 =  9  C|133 - 56 = 77 F- 2000' 10.3  | 66  260
COPLEY      | 04:59-05:24| 60%  0% 18%| 25 - 11 = 14  D| 81 - 44 = 37  E 1600' 13.5  |112  740
AUDITORIUM  | 07:09-07:28|100%  1% 31%| 19 -  9 = 10  C|105 - 75 = 30  C 2800' 18.2  | 85  225
KENMORE     | 09:03-09:24|100%  1% 31%| 21 -  9 = 12  D| 95 - 51 = 44  E 2250' 16.1  |208  315
BLANDFORD   | 10:09-11:09|100% 10% 37%| 60 -  5 = 55 F=| 45 - 37 =  8  B 1100' 16.7  | 78  147
B.U.EAST    | 12:09-12:51|100%  7% 35%| 42 -  8 = 34 F=| 60 - 39 = 21  C 1400' 15.9  |180  154
B.U.CENTRAL | 13:35-13:53|100%  8% 36%| 18 -  8 = 10  D| 44 - 21 = 23  F  750' 11.6  | 73  178|
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  268 - 83 =185   |638 -365 =273   13400'   --  |1021 2221
   Ever ...   |  AVERAGE:  88%  4% 29%  30 -  9 = 21  F| 80 - 46 = 34  D 1675' 14.3  | 11  278|
^ = Worst Time|  MAXIMUM: 100% 10% 37%  60   14   55   |133 . 75   77     2800' 18.2  |208Worst|
   Ever .....|  MINIMUM:  60%  0% 18%  17    5    7   | 44   21    8      750' 10.3  |   Dwell|
---------  MEAN DEVIATION:   LOADING  6% LOST DWELL 16sec|LOST LINK 14 sec         14%|Worst
     STANDARD DEVIATION:   LOADING  6% LOST DWELL 16sec|LOST LINK 19 sec         18%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE  CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet     TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...      --    <:<<<:<<<     --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --    4:.58:.47 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    5:.13:.35  14 :.48   10.2  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA       |
LRV CAPACITY :  50 SEATS + 116 STANDEES               ----------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE     =======================================
  THIS TRIP  THAN LOS .. E / C / B
=======================================    Another LRV was one block ahead at B.U.Central
PARK    -  |                            |  LRV-1 @ B.U.Central   17:40 out
BOYL  13%  |    THE        13% 15% 18%  |  LRV-2 @ B.U.Central   18:00 out, bad wheel
ARLI  11%  |    LINK       13% 17% 19%  |
COPL  15%  |EFFICIENCIES   15% 19% 22%  |
AUDI  13%  |   WOULD       13% 13% 13%  |
KENM  17%  |    BE         17% 21% 24%  |
BLAN  25%  |   ....        25% 25% 25%  |
BU.E  24%  |               24% 24% 28%  |
BU.C  17%  |               18% 23% 27%  |
=======================================
     17%    AVERAGE LINK 17% 20% 22%
  GAIN IN RIDERS :
...Link Improvements only  0% 18% 29%
...Link & Dwell Improvements
                           20% 35% 52%
 B O S T O N  C O L L E G E  OUTBOUND #73  SHK  Rider    AVER. TRIP SPEED =  11.8  LOS C
.WEDNESDAY, OCTOBER 26, 1988   Typed by:    SHK  MAR.12, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:10 P.M.      Checked by: SHK  MAY 13, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST  |
9   STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |   LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
==========================================================================================
PARK STREET | 09:30-10:42|100%  6% 34%| 72 - 14 = 58 F=| --   --   --      --     -- |131  -- 
BOYLSTON    | 12:02-12:16|100%  8% 36%| 14 - 10 =  4  B| 80 - 42 = 38  E 1500' 12.8 | 88  202|
ARLINGTON   | 14:00-14:17|100%  8% 36%| 17 -  9 =  8  C|104 - 56 = 48  E 2000' 13.1 | 66  260|
COPLEY      | 15:22-15:44| 96%  0% 29%| 22 - 11 = 11  C| 65 - 44 = 21  C 1600' 16.8 |112  740|
AUDITORIUM  | 17:17-17:32| 92%  0% 28%| 15 -  9 =  6  B| 93 - 75 = 18  B 2800' 20.5 | 85  225|
KENMORE     | 18:57-19:20| 92%  0% 28%| 23 -  9 = 14  D| 85 - 51 = 34  D 2250' 18.0 |208  315|
BLANDFORD   | 20:01-20:20|100%  2% 32%| 19 -  5 = 14 F-| 41 - 37 =  4  A 1100' 18.3 | 78  147|
B.U.EAST    | 21:21-21:38|100%  2% 32%| 17 -  8 =  9  C| 61 - 39 = 22  C 1400' 15.6 |180  154|
B.U.CENTRAL | 22:21-22:37|100%  0% 30%| 16 -  8 =  8  C| 43 - 21 = 22  F  750' 11.9 | 73  178|
===========================================================================================
* = Best Time |  TOTALS :  --  --  --  215 - 83 =132  |572 -365 =207   13400'    -- |1021 2221
   Ever ...   |  AVERAGE:  98%  3% 32%  24 -  9 = 15  D| 72 - 46 = 26  C 1675' 16.0 | 11  278|
^ = Worst Time|  MAXIMUM: 100%  8% 36%  72    14    58 |104   75   48     2800' 20.5 |208Worst|
   Ever .....|  MINIMUM:  92%  0% 28%  14     5     4 | 41   21    4      750' 11.9 |   Dwell
~~~~~~~~~   MEAN DEVIATION:  LOADING  3% LOST DWELL 11sec|LOST LINK 11 sec        14%|Worst
     STANDARD DEVIATION:  LOADING  3% LOST DWELL 16sec|LOST LINK 13 sec        19%|Link 740
-------------------------------------------------------------------------------------------
              DISTANCE  CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                Feet     TIME       TIME    MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...   --    <:<<<:<<<     --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives    --    6:.09:.30 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400  6:.22:.21  12 :.51   11.8  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ... 3,800  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line  12,500  <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------- | <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge    |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES            -----------------------------------------

     LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE     ======================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================
PARK    -    |                          |
BOYL  18%    |    THE       18% 23% 26% |
ARLI  19%    |    LINK      19% 24% 28% |
COPL  24%    |EFFICIENCIES 24% 24% 28% |
AUDI  23%    |   WOULD      23% 23% 23% |
KENM  17%    |    BE        17% 19% 22% |
BLAN  25%    |   ....       25% 25% 25% |
BU.E  20%    |              20% 20% 25% |
BU.C  16%    |              17% 21% 25% |
=======================================
     20%    AVERAGE LINK 21% 23% 25%
  GAIN IN RIDERS :
...Link Improvements only  5% 15% 25%
...Link & Dwell Improvements
                          10% 20% 35%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #74  SHK  Rider    AVER. TRIP SPEED =   9.1  LOS E
.... FRIDAY, NOVEMBER 18, 1988  Typed by:    SHK  MAR.13, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  1:30 P.M.       Checked by: SHK  MAY 13, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
=============================================================================================
PARK STREET  | 29:49-30:59|100% 20% 44%| 70 - 14 = 56 F=| --    --    --     --     -- |131   --
BOYLSTON     | 31:47-32:09|100% 20% 44%| 22 - 10 = 12  D| 48 - 42 =  6  A 1500' 21.3 | 42  137
ARLINGTON    | 33:56-34:26|100% 25% 48%| 30 -  9 = 21  F|107 - 56 = 51  E 2000' 12.7 | 66  205
COPLEY       | 36:47-37:12|100% 25% 48%| 25 - 11 = 14  D|141 - 44 = 97 F= 1600'  7.7 |112  740
AUDITORIUM   | 39:52-40:12|100% 25% 48%| 20 -  9 = 11  D|160 - 75 = 85  F 2800' 11.9 | 85  225
KENMORE      | 42:24-42:45|100% 20% 44%| 21 -  9 = 12  D|132 - 51 = 81 F= 2250' 11.6 | 61  315
BLANDFORD    | 43:25-44:04|100% 30% 51%| 39 -  5 = 34 F=| 40 - 37 =  3  A 1100' 18.8 | 78  147
B.U.EAST     | 44:54-45:43|100% 30% 51%| 49 -  8 = 41 F=| 50 - 39 = 11  B 1400' 19.1 |180  154
B.U.CENTRAL  | 46:21-46:51|100% 30% 51%| 30 -  8 = 22 F-| 38 - 21 = 17  E  750' 13.5 | 73  178
=============================================================================================
* = Best Time  |  TOTALS :  --   --   --  306 - 83 =223    |716 -365 =351   13400'   -- |828  2101
    Ever ...   |  AVERAGE: 100% 25% 48%  34 -  9 = 25 F-| 90 - 46 = 44  E 1675' 12.8 | 92  263
^ = Worst Time|  MAXIMUM: 100% 30% 51%  70    14    56    |160   75   97     2800' 21.3 |180Worst
    Ever .....|  MINIMUM: 100% 20% 44%  20     5    11    | 38   21    3      750'  7.7 |   Dwell
~~~~~~~~  MEAN DEVIATION:   LOADING  3% LOST DWELL 14sec|LOST LINK 35 sec             25% |Worst
     STANDARD DEVIATION:   LOADING  3% LOST DWELL 15sec|LOST LINK 37 sec             47% |Link 740
---------------------------------------------------------------------------------------------
                    DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                      Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...        --    <:<<<:<<<      --       --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform    2,500   <:<<<:<<< <<< :<<<   <<<<<     |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --      1:.29:.49 <<< :<<<    --      |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip      13,400   1:.46:.21  16 :.32    9.1      |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...    3,800   <:<<<:<<< <<< :<<<   <<<<<     |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...    19,700  '<:<<<:<<< <<< :<<<   <<<<<     |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line     12,500   <:<<<:<<< <<< :<<<   <<<<<     |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
----------------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge          |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                   ---------------------------------------

     LINK       SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY    IMPROVED SO NONE WERE WORSE      ======================================
  THIS TRIP     THAN LOS .. E / C / B
=====================================
PARK    -    |                         |
BOYL  39%    |    THE       39% 39% 39%|
ARLI  23%    |    LINK      23% 29% 34%|
COPL  15%    |EFFICIENCIES 25% 32% 37%|
AUDI  23%    |   WOULD      25% 32% 37%|
KENM  19%    |    BE        25% 32% 37%|
BLAN  41%    |   ....       41% 41% 41%|
BU.E  40%    |              40% 40% 40%|
BU.C  28%    |              28% 34% 39%|
=====================================
      24%    AVERAGE LINK 29% 34% 38%
  GAIN IN RIDERS :
...Link Improvements only 21% 42% 58%
...Link & Dwell Improvements
                          29% 52% 74%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #75  SHK  Rider     AVER. TRIP SPEED = 10.3  LOS D
.. THURSDAY, DECEMBER 8, 1988   Typed by:    SHK  MAR.19, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  3:50 P.M.       Checked by: SHK  MAY 13, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=============================================================================================
PARK STREET  | 48:29-49:02|100%  2% 32%| 33 - 14 = 19  D| --   --   --      --    -- |131  -- 
BOYLSTON     | 50:18-50:50|100%  6% 34%| 32 - 10 = 22  F| 76 - 42 = 34  E 1500' 13.5 | 88  202|
ARLINGTON    | 52:46-53:18|100%  9% 36%| 32 -  9 = 23 F-|116 - 56 = 60  F 2000' 11.8 | 66  260|
COPLEY       | 54:30-54:59|100% 25% 48%| 29 - 11 = 18  E| 72 - 44 = 28  D 1600' 15.2 |112  740|
AUDITORIUM   | 57:08-57:38|100% 62% 73%| 30 -  9 = 21  F|129 - 75 = 54  D 2800' 14.8 | 85  225|
KENMORE      | 59:12-59:36|100% 62% 73%| 24 -  9 = 15  E| 94 - 51 = 43  E 2250' 16.3 |208  315|
BLANDFORD   4:00:24-00:46|100% 62% 73%| 22 -  5 = 17 F=| 48 - 37 = 11  B 1100' 15.6 | 78  147|
B.U.EAST     | 01:42-02:20|100% 50% 65%| 38 -  8 = 30 F=| 56 - 39 = 17  C 1400' 17.0 |180  154|
B.U.CENTRAL  | 03:06-03:31|100% 50% 65%| 25 -  8 = 17  F| 46 - 21 = 25  F  750' 11.1 | 73  178|
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  265 - 83 =182   |637 -365 =272   13400'    -- |1021 2221
   Ever ...   |  AVERAGE: 100% 36% 55%  29 -  9 = 20  F| 80 - 46 = 34  D 1675' 14.3 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 62% 73%  38   14   30    |129   75   60    2800' 17.0 |208Worst|
   Ever .....|  MINIMUM: 100%  2% 32%  22    5   15    | 46   21   11     750' 11.1 |   Dwell|
~~~~~~~~~  MEAN DEVIATION:  LOADING 18% LOST DWELL  4sec|LOST LINK 14 sec         11%|Worst   |
     STANDARD DEVIATION:  LOADING 17% LOST DWELL  4sec|LOST LINK 16 sec         16%|Link 740|
---------------------------------------------------------------------------------------------
                 DISTANCE  CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST|
                   Feet     TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK|
Leave Door ...     --     <:<<<:<<<     --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK|
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK|
Train Arrives      --     3:.48:.29 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK|
Transit Trip    13,400   4:.03:.06  14 :.37   10.3  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK|
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK|
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK|
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK|
-----------------------------------------------------|<<<<<<<<<<<> more              more    |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES              ------------------------------------------

    LINK       SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY    IMPROVED SO NONE WERE WORSE      =======================================
 THIS TRIP     THAN LOS .. E / C / B
=====================================        At Park Street platform : southbound ...
PARK    -   |                         |      Boston College  LRV-1  Express to Kenmore
BOYL  18%   |    THE         18% 21% 25%|        46:25 in  47:12 out  Dwell: 47 seconds
ARLI  16%   |    LINK        18% 23% 26%|      Brigham Circle  LRV-2  47:49 in
COPL  22%   |EFFICIENCIES 22% 24% 28%|
AUDI  28%   |    WOULD       28% 32% 37%|
KENM  40%   |     BE         40% 49% 56%|
BLAN  56%   |    ....        56% 56% 56%|
BU.E  51%   |                51% 51% 56%|
BU.C  30%   |                34% 43% 50%|
=====================================
     32%    AVERAGE LINK 32% 37% 42%
  GAIN IN RIDERS :
...Link Improvements only  0% 16% 31%
...Link & Dwell Improvements
                          11% 30% 51%
```

```
 B O S T O N  C O L L E G E  OUTBOUND #76  SHK  Rider     AVER. TRIP SPEED =  12.5  LOS C
.... MONDAY, DECEMBER 12, 1988  Typed by:   SHK  JAN,7, 89   Previous Worst =   5.1  LOS F=
 ..Begin Trip  7:30 P.M.       Checked by: SHK  MAY 13,89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |    LINK
LRV (two) T7|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
=============================================================================================
PARK STREET  | 31:10-31:42|  95%   0% 29%|  32 - 18 = 14  B|  --   --   --      --    -- |131  --
BOYLSTON     | 32:32-32:47|  95%   0% 29%|  15 - 10 =  5  B|  50 - 42 =  8  A 1500' 20.5 | 42  202
ARLINGTON    | 34:20-34:37|100%   5% 34%|  17 - 12 =  5  B|  93 - 56 = 37  D 2000' 14.7 | 66  260
COPLEY       | 35:35-35:57|100%   4% 33%|  22 - 13 =  9  B|  58 - 44 = 14  B 1600' 18.8 |112  740
AUDITORIUM   | 37:40-38:00|100%   4% 33%|  20 -  9 = 11  D|103 - 75 = 28  B 2800' 18.5 | 85  225
KENMORE      | 39:34-40:01|100%   0% 30%|  27 -  9 = 18  F|  94 - 51 = 43  E 2250' 16.3 |208  315
BLANDFORD    | 40:48-41:17|100%   7% 35%|  29 -  5 = 24 F=|  47 - 37 = 10  B 1100' 16.0 | 78  147
B.U.EAST     | 42:18-42:38|100%   9% 36%|  20 -  8 = 12  D|  61 - 39 = 22  C 1400' 15.6 |180  154
B.U.CENTRAL  | 43:23-43:39|100%   7% 35%|  16 -  8 =  8  C|  45 - 21 = 24  F  750' 11.4 | 73  178
=============================================================================================
* = Best Time  |  TOTALS :   --   --   --  198 - 92 =106   |551 -365 =186    13400'    -- |1021 2221
   Ever ...    |  AVERAGE:  99%   4%  33%   22 - 10 = 12  C|  69 - 46 = 23  C 1675' 16.6 |  11  278
^ = Worst Time |  MAXIMUM: 100%   9%  36%   32    18    24 |103   75   43     2800' 20.5 |208Worst
   Ever .....  |  MINIMUM:  95%   0%  29%   15     5     5 |  45   21    8      750' 11.4 |   Dwell
--------     MEAN DEVIATION:  LOADING   2% LOST DWELL 5 sec|LOST LINK 10 sec          11%|Worst
        STANDARD DEVIATION:  LOADING   3% LOST DWELL 6 sec|LOST LINK 12 sec          18%|Link 740
---------------------------------------------------------------------------------------------
                DISTANCE  CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                  Feet     TIME       TIME     MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --    <:<<<:<<<     --       --    |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500  <:<<<:<<< <<< :<<<  <<<<<    |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --    7:.31:.10 <<< :<<<    --     |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400  7:.43:.23  12 :.13   12.5    |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<  <<<<<    |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700  <:<<<:<<< <<< :<<<  <<<<<    |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500  <:<<<:<<< <<< :<<<  <<<<<    |  DWELL 3.0   or  => F=  <= 1.5   or  LINK
-----------------------------------------------------|<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ----------------------------------------

    LINK       SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY    IMPROVED SO NONE WERE WORSE     ========================================
 THIS TRIP     THAN LOS .. E / C / B
=============================================  First trip made on a new type 7 train on
PARK    -   |                           |        the Boston College Line.
BOYL  24%   |    THE        24% 24% 24% |
ARLI  17%   |    LINK       17% 19% 22% |
COPL  26%   |EFFICIENCIES 26% 26% 26% |
AUDI  24%   |   WOULD       24% 24% 24% |
KENM  18%   |    BE         18% 22% 25% |
BLAN  24%   |   ....        24% 24% 24% |
BU.E  22%   |               22% 22% 27% |
BU.C  17%   |               19% 24% 28% |
=============================================
     22%    AVERAGE LINK 22% 24% 25%
 GAIN IN RIDERS :
...Link Improvements only  0%   9% 14%
...Link & Dwell Improvements
                            5% 13% 23%
 B O S T O N  C O L L E G E   OUTBOUND #77  SHK  Rider     AVER. TRIP SPEED =  14.8  LOS B
 .. THURSDAY, DECEMBER 30, 1988  Typed by:   SHK  JAN.12, 89  Previous Worst =   4.8  LOS F=
  ..Begin Trip  8:10 P.M.        Checked by: SHK  MAY 13, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION  Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  |  WORST  |
 9  STATIONS |   TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK|
 LRV (two) BV|  IN   OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS    MPH   |DWELL    |
===========================================================================================
PARK STREET  | 08:02-08:16| 12%  0%  4%| 14*- 14 =  0* A| --  --  --    --      --  |131   -- |
BOYLSTON     | 09:15-09:26| 12%  0%  4%| 11 - 10 =  1  A| 59 - 42 = 17  C 1500' 17.3 | 88  202 |
ARLINGTON    | 10:55-11:04| 12%  0%  4%|  9*-  9 =  0* A| 89 - 56 = 33  C 2000' 15.3 | 66  260 |
COPLEY       | 11:56-12:07| 24%  0%  7%| 11*- 11 =  0* A| 52 - 44 =  8  A 1600' 21.0 |112  740 |
AUDITORIUM   | 13:43-13:53| 16%  0%  5%| 10 -  9 =  1  A| 96 - 75 = 21  B 2800' 19.9 | 85  225 |
KENMORE      | 15:22-15:32| 16%  0%  5%| 10 -  9 =  1  A| 89 - 51 = 38  D 2250' 17.2 |208  315 |
BLANDFORD    | 16:13-16:21| 16%  0%  5%|  8 -  5 =  3  B| 41 - 37 =  4  A 1100' 18.3 | 78  147 |
B.U.EAST     | 17:22-17:31| 12%  0%  4%|  9 -  8 =  1  A| 61 - 39 = 22  C 1400' 15.6 |180  154 |
B.U.CENTRAL  | 18:18-18:27|  8%  0%  2%|  9 -  8 =  1  A| 47 - 21 = 26 F-  750' 10.9 | 73  178 |
===========================================================================================
* = Best Time |  TOTALS :  --  --  --   91 - 83 =  8   |534 -365 =169    13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  14%  0%  4%  10 -  9 =  1  A| 67 - 46 = 21  C 1675' 17.1  | 11  278|
^ = Worst Time|  MAXIMUM:  24%  0%  7%  14    14     3  | 96   75   38     2800' 21.0 |208Worst
    Ever .....|  MINIMUM:   8%  0%  2%   8     5     0  | 41   21    4      750' 10.9 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING   1% LOST DWELL 1 sec|LOST LINK  9 sec          12%|Worst
      STANDARD DEVIATION:  LOADING   1% LOST DWELL 1 sec|LOST LINK 11 sec          17%|Link 740
-------------------------------------------------------------------------------------------
               DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                 Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --    <:<<<:<<<      --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500  <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --    8:.08:.02 <<< :<<<     --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400  8:.18:.18  10 :.16    14.8  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700  <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500  <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
----------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge    |     LEVEL OF SERVICE CRITERIA       |
LRV CAPACITY :  50 SEATS + 116 STANDEES             ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

    LINK      SUPPOSE ALL LINK TIMES WERE    TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE    =======================================
 THIS TRIP    THAN LOS .. E / C / B
=======================================
PARK    -   |                          |
BOYL   3%   |   THE        3%  3%  3%  |
ARLI   3%   |   LINK       3%  3%  3%  |
COPL   3%   |EFFICIENCIES  3%  3%  3%  |
AUDI   5%   |   WOULD      5%  5%  5%  |
KENM   3%   |    BE        3%  3%  4%  |
BLAN   5%   |   ....       5%  5%  5%  |
BU.E   3%   |              3%  3%  4%  |
BU.C   2%   |              2%  3%  3%  |
=======================================
      3%    AVERAGE LINK  3%  3%  3%
  GAIN IN RIDERS :
...Link Improvements only  0%  0%  0%
...Link & Dwell Improvements
                          -2%  0%  8%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #78  SHK  Rider     AVER. TRIP SPEED =   9.6  LOS E
. WEDNESDAY, JANUARY 11 ,1989   Typed by:    SHK  JAN.11,89   Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:30 P.M.       Checked by: SHK  MAY 13,89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  |  WORST
9   STATIONS|   TIME    | 50 STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK
LRV (two) BV| IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
=============================================================================================
PARK STREET  | 31:25-32:24|100% 10% 37%| 59 - 18 = 41  F| --    --   --     --     -- |131  --
BOYLSTON     | 33:22-33:52|100% 15% 41%| 30 - 10 = 20  F| 58 - 42 = 16  B 1500' 17.6 | 88  202
ARLINGTON    | 35:30-35:56|100% 16% 41%| 26 - 12 = 14  C| 98 - 56 = 42  D 2000' 13.9 | 66  260
COPLEY       | 36:47-37:21|100% 22% 45%| 34 - 13 = 21  E| 51 - 44 =  7  A 1600' 21.4 |112  740
AUDITORIUM   | 38:45-39:16|100% 20% 44%| 31 -  9 = 22 F-| 84 - 75 =  9  A 2800' 22.7 | 85  225
KENMORE      | 40:51-41:40|100% 10% 37%| 49 -  9 = 40 F=| 95 - 51 = 44  E 2250' 16.1 |208  315
BLANDFORD    | 42:25-44:52|100%  9% 36%|147^-  5 =142^F=| 45 - 37 =  8  B 1100' 16.7 | 78  147
B.U.EAST     | 46:32-46:42|100%  6% 34%| 10 -  8 =  2  A|100 - 39 = 61 F= 1400'  9.5 |180  154
B.U.CENTRAL  | 47:16-47:32|100%  5% 34%| 16 -  8 =  8  C| 34 - 21 = 13  D  750' 15.0 | 73  178
=============================================================================================
* = Best Time |  TOTALS :  --   --   --  402 - 92 =310   |565 -365 =200   13400'   -- |1021 2221
    Ever ...  |  AVERAGE: 100% 13% 39%  45 - 10 = 34 F= | 71 - 46 = 25  C 1675' 16.2 | 11  278
^ = Worst Time|  MAXIMUM: 100% 22% 45% 147   18  142    |100   75   61    2800' 22.7 |208Worst
    Ever .....|  MINIMUM: 100%  5% 34%  10    5    2    | 34   21    7     750'  9.5 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING   4% LOST DWELL30 sec|LOST LINK 18 sec         16%|Worst
     STANDARD DEVIATION:  LOADING   4% LOST DWELL40 sec|LOST LINK 19 sec         28%|Link 740
---------------------------------------------------------------------------------------------
               DISTANCE   CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                 Feet      TIME       TIME    MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<     --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --     5:.31:.25 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   5:.47:.16  15 :.51   9.6   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
----------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge    |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES            ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
    LINK       SUPPOSE ALL LINK TIMES WERE
 EFFICIENCY    IMPROVED SO NONE WERE WORSE
 THIS TRIP     THAN LOS .. E / C / B
=======================================
PARK    -   |                          |
BOYL  27%   |   THE          27% 27% 27%|
ARLI  23%   |   LINK         23% 27% 32%|
COPL  35%   |EFFICIENCIES    35% 35% 35%|
AUDI  40%   |   WOULD        40% 40% 40%|
KENM  24%   |    BE          24% 29% 34%|
BLAN  30%   |   ....         30% 30% 30%|
BU.E  14%   |                19% 24% 28%|
BU.C  21%   |                21% 23% 26%|
=======================================
     25%    AVERAGE LINK 26% 29% 31%
  GAIN IN RIDERS :
...Link Improvements only  4% 16% 24%
...Link & Dwell Improvements
                           34% 50% 66%
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
======================================

Weather : dry 30 degrees
The lengthy wait at Blandford Street was caused by the motormen separating the two LRV units. The previous maximum dwell of 78 seconds was increased to 147 seconds or 2 1/2 minutes.

```
 B O S T O N   C O L L E G E   OUTBOUND #79  SHK  Rider     AVER. TRIP SPEED =  10.2  LOS D
...THURSDAY, JANUARY 12, 1989   Typed by:    SHK  JAN.12,89   Previous Worst =   4.8  LOS F=
 ..Begin Trip  2:20 P.M.        Checked by: SHK  MAY 14,89   Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders| DWELL TIME   L| STATION-STATION or "LINK"  | WORST  |
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |   LINK |
LRV (one) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=======================================================================================
PARK STREET | 19:24-19:52| 50%  0% 15%| 28 - 14 = 14  C| --   --   --    --     -- |131  --
BOYLSTON    | 21:09-21:25| 45%  0% 14%| 16 - 10 =  6  B| 77 - 42 = 35  E 1500' 13.3 | 88  202
ARLINGTON   | 23:09-23:28| 68%  0% 20%| 19 -  9 = 10  C|104 - 56 = 48  E 2000' 13.1 | 66  260
COPLEY      | 24:29-24:50|100%  5% 34%| 21 - 11 = 10  C| 61 - 44 = 17  B 1600' 17.9 |112  740
AUDITORIUM  | 27:20-27:39|100%  4% 33%| 19 -  9 = 10  C|150 - 75 = 75  F 2800' 12.7 | 85  225
KENMORE     | 29:15-29:56|100% 22% 45%| 41 -  9 = 32 F=| 96 - 51 = 45  E 2250' 16.0 |208  315
BLANDFORD   | 30:58-31:51|100% 40% 58%| 53 -  5 = 48 F=| 62 - 37 = 25  D 1100' 12.1 | 78  147
B.U.EAST    | 33:04-33:23|100% 40% 58%| 19 -  8 = 11  D| 73 - 39 = 34  E 1400' 13.1 |180  154
B.U.CENTRAL | 34:17-34:39|100% 40% 58%| 22 -  8 = 14  E| 54 - 21 = 33 F=  750'  9.5 | 73  178
=======================================================================================
* = Best Time |  TOTALS :   --  --  --  238 - 83 =155   |677 -365 =312   13400'   --  |1021 2221
   Ever ...   |  AVERAGE:  85% 17% 37%   26 -  9 = 17  E| 85 - 46 = 39  E 1675' 13.5 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 40% 58%   53    14   48  |150   75   75    2800' 17.9 |208Worst
   Ever .....|  MINIMUM:  45%  0% 14%   16     5    6  | 54   21   17     750'  9.5 |   Dwell
~~~~~~~~  MEAN DEVIATION:  LOADING 18% LOST DWELL11 sec|LOST LINK 13 sec          12%|Worst
     STANDARD DEVIATION:  LOADING 17% LOST DWELL13 sec|LOST LINK 16 sec          18%|Link 740
---------------------------------------------------------------------------------------
               DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                 Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<     --       --   |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LINK
Arrive Platform 2,500   2:.19:.00 <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LINK
Train Arrives     --     2:.19:.24   0 :.24    --    |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LINK
Transit Trip   13,400   2:.34:.17  14 :.53    10.2   |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LINK
Arrive Door ... 3,800   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <=  1.0 -1.2 LINK
Total Trip ... 19,700   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <=  1.2 -1.5 LINK
Straight Line  12,500   <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0   or  => F=  <=  1.5   or  LINK
-----------------------------------------------------|<<<<<<<<<<<> more               more     |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |     LEVEL OF SERVICE CRITERIA           |
LRV CAPACITY :  50 SEATS + 116 STANDEES              -------------------------------------------

    LINK      SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE      =======================================
 THIS TRIP    THAN LOS .. E / C / B
========================================
PARK    -   |                          |
BOYL    8%  |    THE        8% 10% 12% |
ARLI    8%  |   LINK        8%  9% 11% |
COPL   14%  |EFFICIENCIES  14% 14% 14% |
AUDI   17%  |   WOULD      17% 23% 26% |
KENM   18%  |    BE        18% 22% 25% |
BLAN   27%  |   ....       27% 30% 35% |
BU.E   31%  |              31% 39% 45% |
BU.C   23%  |              31% 39% 45% |
========================================
     20%    AVERAGE LINK 20% 25% 28%
  GAIN IN RIDERS :
...Link Improvements only  0% 25% 40%
...Link & Dwell Improvements
                          11% 32% 51%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #80  SHK  Rider    AVER. TRIP SPEED =  11.0  LOS D
.... FRIDAY, JANUARY 27, 1989   Typed by:    SHK  JAN.27, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:20 P.M.       Checked by: SHK  MAY 14, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES  |  STATION   Max166 Riders| DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9   STATIONS|   TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
=============================================================================================
PARK STREET | 23:15-24:13|100% 12% 39%| 58 - 14 = 44 F=| --    --   --     --    -- |131  -- |
BOYLSTON    | 25:06-25:27|100% 20% 44%| 21 - 10 = 11  C| 53 - 42 = 11  B 1500' 19.3 | 88  202|
ARLINGTON   | 27:09-27:35|100% 23% 46%| 26 -  9 = 17  E|102 - 56 = 46  E 2000' 13.4 | 66  260|
COPLEY      | 28:30-28:59|100% 20% 44%| 29 - 11 = 18  E| 55 - 44 = 11  B 1600' 19.8 |112  740|
AUDITORIUM  | 30:50-31:16|100% 16% 41%| 26 -  9 = 17  E|111 - 75 = 36  C 2800' 17.2 | 85  225|
KENMORE     | 33:04-33:32|100%  0% 30%| 28 -  9 = 19  F|108 - 51 = 57  F 2250' 14.2 |208  315|
BLANDFORD   | 34:24-34:57|100%  0% 30%| 33 -  5 = 28 F=| 52 - 37 = 15  C 1100' 14.4 | 78  147|
B.U.EAST    | 36:00-36:19| 95%  0% 29%| 19 -  8 = 11  D| 63 - 39 = 24  D 1400' 15.2 |180  154|
B.U.CENTRAL | 37:05-37:22| 95%  0% 29%| 17 -  8 =  9  C| 46 - 21 = 25  F  750' 11.1 | 73  178|
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  257 - 83 =174   |590 -365 =225    13400'   -- |1021 2221
   Ever ...   |  AVERAGE:  99% 10% 37%  29 -  9 = 19  F| 74 - 46 = 28  C 1675' 15.5 | 11  278|
^ = Worst Time|  MAXIMUM: 100% 23% 46%  58    14    44 |111   75   57    2800' 19.8 |208Worst|
   Ever .....|  MINIMUM:  95%  0% 29%  17     5     9 | 46   21   11     750' 11.1 |   Dwell|
~~~~~~~~~   MEAN DEVIATION:  LOADING  7% LOST DWELL 8 sec|LOST LINK 13 sec          14%|Worst   |
      STANDARD DEVIATION:  LOADING  7% LOST DWELL10 sec|LOST LINK 16 sec          20%|Link 740|
---------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                  Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<     --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   5:.20:.30  <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --    5:.23:.15    2 :.45    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   5:.37:.05   13 :.50   11.0  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<<  <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<<  <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<<  <<< :<<<  <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-----------------------------------------------------| <<<<<<<<<<<<> more              more   |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |       LEVEL OF SERVICE CRITERIA       |
LRV CAPACITY :  50 SEATS + 116 STANDEES               ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

    LINK      SUPPOSE ALL LINK TIMES WERE
 EFFICIENCY   IMPROVED SO NONE WERE WORSE
 THIS TRIP    THAN LOS .. E / C / B
========================================
PARK    -   |                          |
BOYL   31%  |    THE        32% 32% 32%|
ARLI   24%  |    LINK       26% 28% 33%|
COPL   37%  | EFFICIENCIES  37% 37% 37%|
AUDI   30%  |    WOULD      30% 30% 34%|
KENM   19%  |     BE        23% 23% 29%|
BLAN   21%  |    ....       21% 21% 23%|
BU.E   19%  |               19% 20% 23%|
BU.C   13%  |               15% 19% 22%|
========================================
     23%    AVERAGE LINK 24% 25% 28%
  GAIN IN RIDERS :
...Link Improvements only  4%  9% 22%
...Link & Dwell Improvements
                           8% 21% 38%
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS
=======================================

Weather : dry 30 degrees
A BC train arrived 5:20:30, left 21:36 LRV-2
At BU Central, the first LRV was directly in front, while another LRV-2 arrived at 39:20.

One middle aged man was standing in the center section, seection wearing headphones and reading a paperback book entitled. "Bimbos of the Death Sun." A mumbing, abusive drunk also caused some minor discomfort to other passengers.

```
 B O S T O N   C O L L E G E   OUTBOUND #81  SHK  Rider     AVER. TRIP SPEED =  11.8  LOS C
... TUESDAY, FEBRUARY 28, 1989  Typed by:    SHK  MAR. 4, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:20 P.M.       Checked by: SHK  MAY 14, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989=================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  | WORST
9   STATIONS|    TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
==============================================================================================

PARK STREET  | 21:30-22:14|100% 17% 42%| 44 - 14 = 30  F| --   --   --     --     -- |131  --
BOYLSTON     | 23:05-23:21|100% 16% 41%| 16 - 10 =  6  B| 51 - 42 =  9  B 1500' 20.1 | 88  202
ARLINGTON    | 24:49-25:09|100% 10% 37%| 20 -  9 = 11  D| 88 - 56 = 32  C 2000' 15.5 | 66  260
COPLEY       | 26:02-26:33|100%  0% 30%| 31 - 11 = 20  E| 53 - 44 =  9  B 1600' 20.6 |112  740
AUDITORIUM   | 28:32-28:53|100%  0% 30%| 21 -  9 = 12  D|119 - 75 = 44  C 2800' 16.0 | 85  225
KENMORE      | 30:46-31:13| 40%  0% 12%| 27 -  9 = 18  F|113 - 51 = 62 F- 2250' 13.6 |208  315
BLANDFORD    | 32:00-32:22| 68%  0% 20%| 22 -  5 = 17 F=| 47 - 37 = 10  B 1100' 16.0 | 78  147
B.U.EAST     | 33:24-33:40| 88%  0% 27%| 16 -  8 =  8  C| 62 - 39 = 23  C 1400' 15.4 |180  154
B.U.CENTRAL  | 34:18-34:39|100%  5% 34%| 21 -  8 = 13  E| 38 - 21 = 17  E  750' 13.5 | 73  178
==============================================================================================
* = Best Time |  TOTALS :  --   --  --  218 - 83 =135   |571 -365 =206   13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  88%  5% 30%  24 -  9 = 15  E| 71 - 46 = 26  C 1675' 16.0 | 11  278
^ = Worst Time|  MAXIMUM: 100% 17% 42%  44   14   30   |119   75   62     2800' 20.6 |208Worst
    Ever .....|  MINIMUM:  40%  0% 12%  16    5    6   | 38   21    9      750' 13.5 |   Dwell
---------   MEAN DEVIATION:  LOADING  8% LOST DWELL  6sec|LOST LINK 15 sec           10%|Worst
      STANDARD DEVIATION:  LOADING  9% LOST DWELL  7sec|LOST LINK 18 sec           18%|Link 740
--------------------------------------------------------------------------------------------

                 DISTANCE   CLOCK      ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --      --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     6:.21:.30 <<< :<<<    --     |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    6:.34:.18  12 :.48   11.8    |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------| <<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |        LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES               ------------------------------------------

    LINK      SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE     =======================================
 THIS TRIP    THAN LOS .. E / C / B
======================================
PARK    -    |                          |
BOYL  35%    |    THE       35% 35% 35% |
ARLI  26%    |   LINK       26% 26% 32% |
COPL  31%    |EFFICIENCIES  31% 31% 31% |
AUDI  19%    |   WOULD      19% 19% 23% |
KENM  14%    |    BE        16% 20% 23% |
BLAN   9%    |   ....        9%  9%  9% |
BU.E  13%    |              13% 13% 15% |
BU.C  15%    |              15% 18% 21% |
======================================
     19%    AVERAGE LINK 20% 21% 23%
  GAIN IN RIDERS :
...Link Improvements only  5% 11% 21%
...Link & Dwell Improvements
                           8% 15% 33%
 B O S T O N  C O L L E G E   OUTBOUND #82  SHK  Rider     AVER. TRIP SPEED =   8.7  LOS F
..WEDNESDAY, MARCH 1, 1989      Typed by:    SHK  MAR. 4, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:00 P.M.        Checked by: SHK  MAY 14, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  |  WORST
9   STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK|
LRV (two) T7|  IN    OUT |SEATS   TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH |DWELL   |
=============================================================================================
PARK STREET  | 00:22-01:36| 52%  0% 16%| 74 - 14 = 60 F=| --   --   --    --      -- |131  -- |
BOYLSTON     | 02:33-02:53| 52%  0% 16%| 20 - 10 = 10  C| 57 - 42 = 15  B 1500' 17.9 | 88  202|
ARLINGTON    | 06:19-06:38| 52%  3% 18%| 19 -  9 = 10  C|206 - 56 =150 F= 2000'  6.6 | 66  260|
COPLEY       | 08:19-08:42| 48%  0% 14%| 23 - 11 = 12  C|101 - 44 = 57 F- 1600' 10.8 |112  740|
AUDITORIUM   | 11:10-11:35| 44%  0% 13%| 25 -  9 = 16  E|148 - 75 = 73  E 2800' 12.9 | 85  225|
KENMORE      | 13:11-13:37| 40%  0% 12%| 26 -  9 = 17  E| 96 - 51 = 45  E 2250' 16.0 |202  315|
BLANDFORD    | 14:26-15:20| 40%  0% 12%| 54 -  5 = 49 F=| 49 - 37 = 12  B 1100' 15.3 | 78  147|
B.U.EAST     | 16:24-17:02| 40%  0% 12%| 38 -  8 = 30 F=| 64 - 39 = 25  D 1400' 14.9 |180  154|
B.U.CENTRAL  | 17:40-17:53| 36%  0% 11%| 13 -  8 =  5  B| 38 - 21 = 17  E  750' 13.5 | 73  178|
=============================================================================================
* = Best Time |  TOTALS :  --  --  --  292 - 83 =209  |759 -365 =394   13400'    -- |1021 2221
    Ever ...  |  AVERAGE:  45%  0% 14%  32 -  9 = 23 F-| 95 - 46 = 49  F 1675' 12.0 | 11  278|
^ = Worst Time|  MAXIMUM:  52%  3% 18%  74   14   60  |206   75  150     2800' 17.9 |202Worst|
    Ever .....|  MINIMUM:  36%  0% 11%  13    5    5  | 38   21   12      750'  6.6 |   Dwell|
~~~~~~~~    MEAN DEVIATION:  LOADING   2% LOST DWELL 17sec|LOST LINK 33 sec          23%|Worst
       STANDARD DEVIATION:  LOADING   2% LOST DWELL 18sec|LOST LINK 43 sec          36%|Link 740
-------------------------------------------------------------------------------------------
               DISTANCE   CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                 Feet      TIME       TIME    MPH  |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --    <:<<<:<<<      --      --  |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --    6:.00:.22 <<< :<<<    --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400   6:.17:.40  17 :.18   8.7   |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ... 3,800   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ... 19,700   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line  12,500   <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
---------------------------------------------------| <<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge   |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES             -------------------------------------
```

```
    LINK      SUPPOSE ALL LINK TIMES WERE
 EFFICIENCY   IMPROVED SO NONE WERE WORSE
  THIS TRIP   THAN LOS .. E / C / B
======================================
PARK    -   |                          |
BOYL  12%   |    THE       12% 12% 12% |
ARLI   4%   |    LINK       8% 11% 12% |
COPL   8%   |EFFICIENCIES   9% 12% 14% |
AUDI   7%   |    WOULD      7%  9% 11% |
KENM   7%   |     BE        7%  9% 10% |
BLAN   9%   |    ....       9%  9%  9% |
BU.E   7%   |               7%  8%  9% |
BU.C   7%   |               7%  8%  9% |
======================================
      7%    AVERAGE LINK   8% 10% 11%
 GAIN IN RIDERS :
...Link Improvements only 14% 43% 57%
...Link & Dwell Improvements
                          28% 51% 72%
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS

At B.U. Central, another LRV was one block ahead.
A third LRV arrived at B.U. Central at 18:20.
A fourth LRV stopped at the B.U. Bridge signals at 6:20:20.
This bunching of trains represents four trains in two minutes.

```
 B O S T O N  C O L L E G E  OUTBOUND #83  SHK  Rider     AVER. TRIP SPEED =  10.1  LOS D
.. WEDNESDAY, MARCH 15, 1989    Typed by:   SHK  MAR.21, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:55 P.M.       Checked by: SHK  MAY 14, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES   |  STATION   Max166 Riders| DWELL TIME     L| STATION-STATION or "LINK"  | WORST
9   STATIONS|   TIME    |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH |DWELL
=============================================================================================
PARK STREET |  57:08-57:46| 90%   3% 29%| 38 - 14 = 24  E| --    --    --     --      -- |131   --
BOYLSTON    |  58:37-58:51| 90%   3% 29%| 14 - 10 =  4  B| 51 - 42 =   9  B 1500' 20.1 | 88  202
ARLINGTON  6:00:54-01:21|100%   0% 30%| 27 -  9 = 18  F|123 - 56 =  67 F- 2000' 11.1 | 66  260
COPLEY      |  04:12-04:34|100%   3% 32%| 22 - 11 = 11  C|171 - 44 =127 F= 1600'  6.4 |112  740
AUDITORIUM  |  06:25-06:41|100%   2% 32%| 16 -  9 =  7  B|111 - 75 =  36  C 2800' 17.2 | 85  225
KENMORE     |  08:35-08:51|100%   2% 32%| 16 -  9 =  7  B|114 - 51 =  63 F- 2250' 13.5 |208  315
BLANDFORD   |  09:33-09:50|100%   0% 30%| 17 -  5 = 12 F-| 42 - 37 =   5  A 1100' 17.9 | 78  147
B.U.EAST    |  11:09-11:30|100%   3% 32%| 21 -  8 = 13  E| 79 - 39 =  40  F 1400' 12.1 |180  154
B.U.CENTRAL |  12:08-12:28|100%   5% 34%| 20 -  8 = 12  D| 38 - 21 =  17  E  750' 13.5 | 73  178
=============================================================================================
* = Best Time |  TOTALS :   --   --   --  191 - 83 =108    |729 -365 =364   13400'    -- |1021 2221
    Ever ...  |  AVERAGE:  98%   2% 31%   21 -  9 = 12  D | 91 - 46 = 46  F 1675' 12.5 |  11  278
^ = Worst Time|  MAXIMUM: 100%   5% 34%   38   14    24    |171   75  127    2800' 20.1 |208Worst
    Ever .....|  MINIMUM:  90%   0% 29%   14    5     4    | 38   21    5     750'  6.4 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING  2% LOST DWELL  5sec|LOST LINK 30 sec         25%|Worst
      STANDARD DEVIATION:  LOADING  2% LOST DWELL  6sec|LOST LINK 38 sec         41%|Link 740
---------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED   SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                   Feet      TIME       TIME      MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives      --     5:.57:.08 <<< :<<<     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400    6:.12:.08  15 :.00    10.1   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<   |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
-------------------------------------------------------|<<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge       |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                 -------------------------------------------

      LINK        SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY     IMPROVED SO NONE WERE WORSE      ========================================
   THIS TRIP      THAN LOS .. E / C / B
=====================================          Empty BC train leaves opposite side track for
PARK     -   |                                   U-turn at 5:55:55.  Enters southbound Park St.
BOYL  24%    |     THE          24% 24% 24%      at 57:08, for a turnaround time of 1:13.
ARLI  13%    |     LINK         15% 19% 22%
COPL   8%    |  EFFICIENCIES    16% 20% 23%    Another LRV one block ahead
AUDI  22%    |     WOULD        22% 22% 25%    Next train LRV-2 14:05 in 14:22 out  1/4 seat
KENM  14%    |      BE          17% 21% 25%            Type 7
BLAN  28%    |     ....         28% 28% 28%    Next train through first signal @ BU Bridge 16:35
BU.E  15%    |                  16% 20% 23%           LRV-2
BU.C  18%    |                  18% 21% 25%    6 Train units in 4 minutes.  Train headway 80 seco
=====================================            Units spacing  40 seconds.
     16%     AVERAGE LINK 19% 22% 24%
  GAIN IN RIDERS :
...Link Improvements only 19% 38% 50%
...Link & Dwell Improvements
                          21% 38% 56%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #84  SHK  Rider     AVER. TRIP SPEED =  11.3  LOS D
.... THURSDAY, MARCH 16, 1989   Typed by:    SHK  MAR.21, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  4:00 P.M.       Checked by: SHK  MAY 14, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   |  WORST
9   STATIONS|   TIME     |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
=============================================================================================
PARK STREET  | 12:37-13:12|100% 10% 37%|  35 - 14 = 21  D|  --   --   --     --     -- |131  --
BOYLSTON     | 14:04-14:17|100% 15% 41%|  13 - 10 =  3  A|  52 - 42 = 10  B 1500' 19.7 | 88  202
ARLINGTON    | 15:51-16:12|100% 19% 43%|  21 -  9 = 12  D|  94 - 56 = 38  D 2000' 14.5 | 66  260
COPLEY       | 17:11-17:42|100% 22% 45%|  31 - 11 = 20  E|  59 - 44 = 15  B 1600' 18.5 |112  740
AUDITORIUM   | 19:17-19:42|100% 26% 48%|  25 -  9 = 16  E|  95 - 75 = 20  B 2800' 20.1 | 85  225
KENMORE      | 21:15-21:50|100% 30% 51%|  35 -  9 = 26 F-|  93 - 51 = 42  E 2250' 16.5 |208  315
BLANDFORD    | 22:41-23:40|100% 60% 72%|  59 -  5 = 54 F=|  51 - 37 = 14  B 1100' 14.7 | 78  147
B.U.EAST     | 24:33-25:20|100% 80% 86%|  47 -  8 = 39 F=|  53 - 39 = 14  B 1400' 18.0 |180  154
B.U.CENTRAL  | 25:57-26:27|100% 90% 93%|  30 -  8 = 22 F-|  37 - 21 = 16  D  750' 13.8 | 73  178
=============================================================================================
* = Best Time |  TOTALS :   --   --   --   296 - 83 =213    |534 -365 =169    13400'    -- |1021 2221
   Ever ...   |  AVERAGE: 100% 39% 57%   33 -  9 = 24 F-|  67 - 46 = 21  C 1675' 17.1 |  11  278|
^ = Worst Time|  MAXIMUM: 100% 90% 93%   59    14    54    |  95   75   42     2800' 20.1 |208Worst
   Ever .....|  MINIMUM: 100% 10% 37%   13     5     3    |  37   21   10      750' 13.8 |   Dwell
~~~~~~~~    MEAN DEVIATION:   LOADING 20% LOST DWELL 12sec|LOST LINK  9 sec            11%|Worst
      STANDARD DEVIATION:   LOADING 20% LOST DWELL 14sec|LOST LINK 11 sec            15%|Link 740
---------------------------------------------------------------------------------------------
                DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME        TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<      --        --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<   <<<<<    |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --     4:.12:.37 <<< :<<<      --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   4:.25:.57  13 :.20     11.3   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 3.0   or  => F=  <= 1.5   or  LINK
-------------------------------------------------------| <<<<<<<<<<<> more               more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge     |      LEVEL OF SERVICE CRITERIA        |
LRV CAPACITY :  50 SEATS + 116 STANDEES             ------------------------------------------

    LINK       SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY    IMPROVED SO NONE WERE WORSE      =======================================
 THIS TRIP     THAN LOS .. E / C / B
======================================     Riverside LRV-2 old  3:59:13 in  4:00:04 out
PARK    -     |                         |   Reservoir LRV-1 new  nonstop  00:15
BOYL  30%     |    THE      30% 30% 30% |   Reservoir LRV-1 new 00:42 in  01:26 out
ARLI  24%     |   LINK      24% 27% 32% |   Boston College LRV-2 new 01:55 in 02:54 out 15 std
COPL  32%     |EFFICIENCIES 32% 32% 32% |    (Sign @ front "BU via Comm. Ave." BC sign on side
AUDI  36%     |   WOULD     36% 36% 36% |   Cleveland Circle LRV-2  03:15 in 03:45 out
KENM  26%     |    BE       26% 32% 37% |   * Riverside LRV-2 old 4:15 in 4:55 out
BLAN  37%     |   ....      37% 37% 37% |   Riverside Express LRV-2 old empty through train
BU.E  53%     |             53% 53% 53% |   Brigham Circle LRV-2 new 5:10 in  6:02 out
BU.C  49%     |             49% 57% 66% |   Reservoir LRV-1 new 6:24 in 7:00 out 25% seated
======================================     * Riverside LRV-3 old 6:51 in 7:42 out  25% seated
     39%    AVERAGE LINK 39% 41% 44%       * Reservoir LRV-1 Express 8:07 through empty
 GAIN IN RIDERS :                          * Cleveland Circle LRV-2 new 8:32 in 8:58 out
...Link Improvements only  0%  5% 13%     * Cleveland Circle LRV-2 new 10:47 in 11:15 out
...Link & Dwell Improvements                          5 standees
                          14% 25% 37%     * Riverside LRV-2 new 11:45 in 12:18 out 75% seate
                                           @ B.U.Central  LRV-2 in at 29:08
```

```
 B O S T O N  C O L L E G E   OUTBOUND #85  SHK  Rider     AVER. TRIP SPEED =  12.6  LOS C
... TUESDAY, MARCH 21, 1989     Typed by:   SHK  MAR.21, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  1:30 P.M.        Checked by: SHK  MAY 14, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989================
 2.5 MILES    |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST  |
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |   LINK |
LRV (one) T7|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS    MPH    |DWELL   |
=========================================================================================
PARK STREET  | 29:44-30:29|100%  2% 32%| 45 - 14 = 31  F| --   --   --     --    --  |131  --
BOYLSTON     | 31:17-31:30|100%  2% 32%| 13 - 10 =  3  A| 48 - 42 =  6  A 1500' 21.3 | 88  202
ARLINGTON    | 32:53-33:17|100%  3% 32%| 24 -  9 = 15  E| 83 - 56 = 27  C 2000' 16.4 | 66  260
COPLEY       | 34:33-35:08|100%  2% 32%| 35 - 11 = 24  F| 76 - 44 = 32  D 1600' 14.4 |112  740
AUDITORIUM   | 36:36-36:49|100%  3% 32%| 13 -  9 =  4  B| 88 - 75 = 13  A 2800' 21.7 | 85  225
KENMORE      | 38:19-38:37|100%  9% 36%| 18 -  9 =  9  C| 90 - 51 = 39  D 2250' 17.0 |208  315
BLANDFORD    | 39:16-39:21|100% 11% 38%|  5*-  5 =  0* A| 39 - 37 =  2  A 1100' 19.2 | 78  147
B.U.EAST     | 40:33-40:49|100% 10% 37%| 16 -  8 =  8  C| 72 - 39 = 33  E 1400' 13.3 |180  154
B.U.CENTRAL  | 41:44-42:04|100% 12% 39%| 20 -  8 = 12  D| 55 - 21 = 34 F=  750'  9.3 | 73  178
=========================================================================================
* = Best Time  |  TOTALS :  --   --   --  189 - 83 =106   |551 -365 =186   13400'  --  |1021 2221
   Ever ...    |  AVERAGE: 100%  6% 34%   21 -  9 = 12  D | 69 - 46 = 23  C 1675' 16.6 | 11  278|
^ = Worst Time |  MAXIMUM: 100% 12% 39%   45    14    31  | 90   75   39    2800' 21.7 |208Worst|
   Ever .....  |  MINIMUM: 100%  2% 32%    5     5     0  | 39   21    2     750'  9.3 |   Dwell|
~~~~~~~~~  MEAN DEVIATION:  LOADING   3% LOST DWELL   9sec|LOST LINK 12 sec         17%|Worst
      STANDARD DEVIATION:  LOADING   3% LOST DWELL  10sec|LOST LINK 13 sec         27%|Link 740|
-----------------------------------------------------------------------------------------
                DISTANCE   CLOCK       ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                  Feet      TIME        TIME      MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --     <:<<<:<<<      --        --    |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<    <<<<<    |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --     1:.29:.44 <<< :<<<     --      |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400   1:.41:.44  12 :.00    12.6     |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800   <:<<<:<<< <<< :<<<    <<<<<    |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700   <:<<<:<<< <<< :<<<    <<<<<    |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500   <:<<<:<<< <<< :<<<    <<<<<    |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
--------------------------------------------------------| <<<<<<<<<<<> more            more     |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge         |      LEVEL OF SERVICE CRITERIA         |
LRV CAPACITY :  50 SEATS + 116 STANDEES                  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

    LINK      SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE     =======================================
 THIS TRIP    THAN LOS .. E / C / B
=======================================
PARK    -    |                          |
BOYL  28%    |   THE       28% 28% 28%  |
ARLI  22%    |   LINK      22% 22% 25%  |
COPL  19%    |EFFICIENCIES 19% 21% 25%  |
AUDI  27%    |   WOULD     27% 27% 27%  |
KENM  18%    |    BE       18% 21% 25%  |
BLAN  34%    |   ....      34% 34% 34%  |
BU.E  21%    |             21% 25% 29%  |
BU.C  14%    |             19% 25% 28%  |
=======================================
     23%    AVERAGE LINK 23% 25% 28%
  GAIN IN RIDERS :
...Link Improvements only  0%  9% 22%
...Link & Dwell Improvements
                            5% 15% 27%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #86  SHK  Rider     AVER. TRIP SPEED =  10.8  LOS D
..WEDNESDAY, MARCH 29, 1989      Typed by:    SHK  APR.15, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  5:00 P.M.         Checked by: SHK  MAY 14, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  |  WORST
9   STATIONS|    TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
============================================================================================
PARK STREET  | 00:37-01:08|  48%  0% 14%| 31 - 14 = 17  D|  --   --   --     --    -- |131   --
BOYLSTON     | 02:13-02:35|  68%  0% 20%| 22 - 10 = 12  D| 65 - 42 = 23  C 1500' 15.7 | 88  202
ARLINGTON    | 04:33-04:50|  68%  0% 20%| 17 -  9 =  8  C|118 - 56 = 62  F 2000' 11.6 | 66  260
COPLEY       | 07:28-07:51|  76%  0% 23%| 23 - 11 = 12  C|158 - 44 =114 F= 1600'  6.9 |112  740
AUDITORIUM   | 09:34-09:49|  76%  0% 23%| 15 -  9 =  6  B|103 - 75 = 28  B 2800' 18.5 | 85  225
KENMORE      | 11:04-11:26|  76%  2% 24%| 22 -  9 = 13  D| 75 - 51 = 24  C 2250' 20.5 |208  315
BLANDFORD    | 12:05-12:32|  80%  3% 26%| 27 -  5 = 22 F=| 39 - 37 =  2  A 1100' 19.2 | 78  147
B.U.EAST     | 13:30-13:47|  80%  2% 25%| 17 -  8 =  9  C| 58 - 39 = 19  C 1400' 16.5 |180  154
B.U.CENTRAL  | 14:37-14:54|  72%  2% 23%| 17 -  8 =  9  C| 50 - 21 = 29 F-  750' 10.2 | 73  178
============================================================================================
* = Best Time |  TOTALS :   --  --  --  191 - 83 =108   |666 -365 =301   13400'    -- |1021 2221
    Ever ...  |  AVERAGE:  72%  1% 22%   21 -  9 = 12  D| 83 - 46 = 38  E 1675' 13.7 | 11  278
^ = Worst Time|  MAXIMUM:  80%  3% 26%   31    14   22  |158   75  114      2800' 20.5 |208Worst
    Ever .....|  MINIMUM:  48%  0% 14%   15     5    6  | 39   21    2       750'  6.9 |   Dwell
~~~~~~~~   MEAN DEVIATION:  LOADING   3% LOST DWELL   4sec|LOST LINK 25 sec          28% |Worst
       STANDARD DEVIATION:  LOADING   3% LOST DWELL   5sec|LOST LINK 33 sec          35% |Link 740
--------------------------------------------------------------------------------------------
               DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                 Feet      TIME       TIME    MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --    <:<<<:<<<     --      --    |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --    5:.00:.37 <<< :<<<    --    |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400   5:.14:.37  14 :.00   10.8   |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ... 3,800   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ... 19,700   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line  12,500   <:<<<:<<< <<< :<<<  <<<<<   |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
----------------------------------------------------| <<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge    |    LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES            ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

    LINK      SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY   IMPROVED SO NONE WERE WORSE     =======================================
 THIS TRIP    THAN LOS .. E / C / B

=======================================      Cleveland Circle  5:00:11 LRV-2 out
PARK     -   |                          |     Brigham Circle  00:45 out
BOYL    9%   |    THE         9%  9% 11%|     Boston College train had a squeaky center joint
ARLI    9%   |    LINK       11% 13% 15%|
COPL    6%   |EFFICIENCIES   11% 13% 15%|     At BU Central, an LRV-2 was directly ahead.
AUDI   17%   |   WOULD       17% 17% 17%|
KENM   16%   |    BE         16% 16% 18%|
BLAN   23%   |   ....        23% 23% 23%|
BU.E   17%   |               17% 17% 20%|
BU.C   11%   |               13% 17% 19%|
=======================================
     12%    AVERAGE LINK 14% 15% 17%
 GAIN IN RIDERS :
...Link Improvements only 17% 25% 42%
...Link & Dwell Improvements
                          12% 21% 36%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #87  SHK  Rider     AVER. TRIP SPEED =  11.7  LOS C
...WEDNESDAY, APRIL 12, 1989    Typed by:   SHK  APR.15, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  6:10 P.M.        Checked by: SHK  MAY 15, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"    |  WORST
9  STATIONS  |    TIME    |50\ STAND   |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED   |    LINK
LRV (two) BV |  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH    |DWELL
==========================================================================================
PARK STREET  | 12:10-12:55|100% 10% 37%| 45 - 14 = 31  F| --   --   --     --     --  |131   --
BOYLSTON     | 13:48-14:10|100% 20% 44%| 22 - 10 = 12  D| 53 - 42 = 11  B 1500' 19.3  | 88  202
ARLINGTON    | 15:54-16:20|100% 22% 45%| 26 -  9 = 17  E|104 - 56 = 48  E 2000' 13.1  | 66  260
COPLEY       | 17:20-17:50|100% 28% 50%| 30 - 11 = 19  E| 60 - 44 = 16  B 1600' 18.2  |112  740
AUDITORIUM   | 19:32-19:58|100% 31% 52%| 26 -  9 = 17  E|102 - 75 = 27  B 2800' 18.7  | 85  225
KENMORE      | 21:32-21:57|100% 34% 54%| 25 -  9 = 16  E| 94 - 51 = 43  E 2250' 16.3  |208  315
BLANDFORD    | 22:39-23:03|100% 36% 55%| 24 -  5 = 19 F=| 42 - 37 =  5  A 1100' 17.9  | 78  147
B.U.EAST     | 24:09-24:32|100% 41% 59%| 23 -  8 = 15  E| 66 - 39 = 27  D 1400' 14.5  |180  154
B.U.CENTRAL  | 25:05-25:25|100% 45% 62%| 20 -  8 = 12  D| 33 - 21 = 12  C  750' 15.5  | 73  178
==========================================================================================
* = Best Time |  TOTALS :  --   --   --  241 - 83 =158  |554 -365 =189   13400'   --  |1021 2221
   Ever ...   |  AVERAGE: 100% 30% 51%  27 -  9 = 18  E| 69 - 46 = 24  C 1675' 16.5  | 11  278|
` = Worst Time|  MAXIMUM: 100% 45% 62%  45   14   31   |104   75   48     2800' 19.3  |208Worst
   Ever .....|  MINIMUM: 100% 10% 37%  20    5   12   | 33   21    5      750' 13.1  |   Dwell
--------   MEAN DEVIATION:  LOADING   7% LOST DWELL  4sec|LOST LINK 13 sec          10%|Worst
      STANDARD DEVIATION:  LOADING   7% LOST DWELL  5sec|LOST LINK 15 sec          15%|Link 740
------------------------------------------------------------------------------------------
              DISTANCE  CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                Feet     TIME       TIME    MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...   --    <:<<<:<<<     --      --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500  <:<<<:<<< <<< :<<<  <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives    --    6:.12:.10 <<< :<<<    --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip   13,400  6:.25:.05  12 :.55   11.7  |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800 <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ... 19,700  <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line  12,500  <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
--------------------------------------------------|<<<<<<<<<<<> more             more  |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge  |      LEVEL OF SERVICE CRITERIA     |
LRV CAPACITY :  50 SEATS + 116 STANDEES            --------------------------------------

    LINK       SUPPOSE ALL LINK TIMES WERE    TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY    IMPROVED SO NONE WERE WORSE    =======================================
 THIS TRIP     THAN LOS .. E / C / B
=======================================   @ BU Central, no outbound trains in sight.
PARK   -    |                        |
BOYL  29%   |    THE       29% 29% 29%|
ARLI  24%   |   LINK       24% 29% 34%|
COPL  33%   |EFFICIENCIES 33% 33% 33%|
AUDI  37%   |   WOULD      37% 37% 37%|
KENM  28%   |    BE        28% 35% 40%|
BLAN  48%   |   ....       48% 48% 48%|
BU.E  33%   |              33% 37% 42%|
BU.C  38%   |              38% 38% 45%|
=======================================
      34%    AVERAGE LINK 34% 37% 39%
 GAIN IN RIDERS :
...Link Improvements only  0%  9% 15%
...Link & Dwell Improvements
                           4% 17% 30%
 B O S T O N  C O L L E G E   OUTBOUND #88  SHK  Rider     AVER. TRIP SPEED =  12.5  LOS C
.. FRIDAY, APRIL 14, 1989       Typed by:    SHK  APR.15, 89  Previous Worst =   4.8  LOS F=
 ..Begin Trip  3:00 P.M.       Checked by: SHK  MAY 15, 89  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   |  WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |     LINK
LRV (two) BV|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH    |DWELL
=============================================================================================
PARK STREET  | 02:33-03:04|  56%  0% 17%| 31 - 14 = 17  D| --    --   --     --     -- |131  --
BOYLSTON     | 03:57-04:10|  68%  0% 20%| 13 - 10 =  3  A|  53 - 42 = 11  B 1500' 19.3 | 88  202
ARLINGTON    | 06:18-06:38|  68%  0% 20%| 20 -  9 = 11  D|128 - 56 = 72 F- 2000' 10.7 | 66  260
COPLEY       | 07:32-07:55|  72%  0% 22%| 23 - 11 = 12  C|  54 - 44 = 10  B 1600' 20.2 |112  740
AUDITORIUM   | 09:24-09:39|  80%  0% 24%| 15 -  9 =  6  B|  89 - 75 = 14  A 2800' 21.5 | 85  225
KENMORE      | 11:08-11:27|100%  9% 36%| 19 -  9 = 10  C|  89 - 51 = 38  D 2250' 17.2 |208  315
BLANDFORD    | 12:07-12:35|100% 28% 50%| 28 -  5 = 23 F=|  40 - 37 =  3  A 1100' 18.8 | 78  147
B.U.EAST     | 13:30-13:47|100% 34% 54%| 17 -  8 =  9  C|  55 - 39 = 16  C 1400' 17.4 |180  154
B.U.CENTRAL  | 14:39-15:01|100% 35% 55%| 22 -  8 = 14  E|  52 - 21 = 31 F-  750'  9.8 | 73  178
=============================================================================================
* = Best Time  |  TOTALS :  --  --  --  188 - 83 =105   |560 -365 =195   13400'    --  |1021 2221
    Ever ...   |  AVERAGE:  83% 12% 33%  21 -  9 = 12  D| 70 - 46 = 24  C 1675' 16.3  | 11  278
^ = Worst Time|  MAXIMUM: 100% 35% 55%  31    14    23  |128    75   72     2800' 21.5 |208Worst
    Ever .....|  MINIMUM:  56%  0% 17%  13     5     3  | 40    21    3      750'  9.8 |   Dwell
--------   MEAN DEVIATION:  LOADING 16% LOST DWELL  5sec|LOST LINK 17 sec         20% |Worst
      STANDARD DEVIATION:  LOADING 15% LOST DWELL  6sec|LOST LINK 21 sec         26% |Link 740
---------------------------------------------------------------------------------------------
                   DISTANCE   CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BEST
                     Feet      TIME      TIME     MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...       --     <:<<<:<<<     --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives       --     3:.02:.33 <<< :<<<    --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip     13,400   3:.14:.39  12 :.06    12.5  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...   3,800   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...   19,700   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line    12,500   <:<<<:<<< <<< :<<<  <<<<<  |   DWELL 3.0   or  => F=  <= 1.5  or  LINK
--------------------------------------------------------| <<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |     LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              --------------------------------------

    LINK       SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
 EFFICIENCY    IMPROVED SO NONE WERE WORSE     ======================================
 THIS TRIP     THAN LOS .. E / C / B         AT PARK STREET :
=======================================      Boston College LRV-1 new 2:56:20 out
PARK    -    |                           |   Reservoir LRV-1 new  56:45 out
BOYL  13%    |     THE       13% 13% 13% |   Brigham Circle LRV-2 new 57:00 in 57:38 out
ARLI   9%    |     LINK      11% 13% 15% |   Riverside LRV-2 new 57:32 in 58:30 out
COPL  16%    |EFFICIENCIES 16% 16% 16% |         stopped at Boston College platform
AUDI  19%    |    WOULD      19% 19% 19% |   (Boston College LRV-2 old stopped on inbd.platform
KENM  14%    |     BE        14% 16% 18% |   Reservoir LRV-1 new 00:45 in  01:20 out
BLAN  33%    |    ....       33% 33% 33% |   Cleveland Circle LRV-2 new  01:04 in  01:30 out
BU.E  35%    |               35% 35% 38% |   Reservoir LRV-2 old 02:05 in
BU.C  22%    |               28% 36% 42% |
=======================================      At BU Central, no other outbound trains in sight.
     22%   AVERAGE LINK 23% 25% 27%
  GAIN IN RIDERS :
...Link Improvements only  5% 14% 23%
...Link & Dwell Improvements
                           8% 17% 27%
 B O S T O N   C O L L E G E   OUTBOUND #89  SHK  Rider     AVER. TRIP SPEED =  11.8  LOS C
 TUESDAY, JUNE 13, 1989         Typed by:    SHK  FEB.26, 90  Previous Worst =   4.8  LOS F-
 ..Begin Trip  6:15 P.M.        Checked by: SHK  FEB.26, 90  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST
9  STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LINK
LRV (one) T7|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH   |DWELL
===========================================================================================
PARK STREET | 12:14-13:26|100% 10% 37%| 72 - 14 = 58 F=| --   --   --     --     -- |131   --
BOYLSTON    | 14:19-14:40|100% 10% 37%| 21 - 10 = 11  C| 53 - 42 = 11  B 1500' 19.3 | 88  202
ARLINGTON   | 16:19-16:43|100% 20% 44%| 24 -  9 = 15  E| 99 - 56 = 43  D 2000' 13.8 | 66  260
COPLEY      | 17:48-18:16|100% 40% 58%| 28 - 11 = 17  D| 65 - 44 = 21  C 1600' 16.8 |112  740
AUDITORIUM  | 19:51-20:12|100% 25% 48%| 21 -  9 = 12  D| 95 - 75 = 20  B 2800' 20.1 | 85  225
KENMORE     | 21:39-22:08|100% 10% 37%| 29 -  9 = 20  F| 87 - 51 = 36  D 2250' 17.6 |208  315
BLANDFORD   | 22:56-23:15|100%  9% 36%| 19 -  5 = 14 F-| 48 - 37 = 11  B 1100' 15.6 | 78  147
B.U.EAST    | 24:05-24:26|100%  7% 35%| 21 -  8 = 13  E| 50 - 39 = 11  B 1400' 19.1 |180  154
B.U.CENTRAL | 24:59-25:17|100%  7% 35%| 18 -  8 = 10  D| 33 - 21 = 12  C  750' 15.5 | 73  178
===========================================================================================
* = Best Time |  TOTALS :  --  --  --  253 - 83 =170   |530 -365 =165   13400'   -- |1021 222
    Ever ...  |  AVERAGE: 100% 15% 41%  28 -  9 = 19  F| 66 - 46 = 21  C 1675' 17.2 | 11  278
^ = Worst Time|  MAXIMUM: 100% 40% 58%  72   14   58   | 99   75   43    2800' 20.1 |208Worst
    Ever .....|  MINIMUM: 100%  7% 35%  18    5   10   | 33   21   11     750' 13.8 |   dwell
~~~~~~~~  MEAN DEVIATION:  LOADING  7% LOST DWELL 10sec|LOST LINK 10 sec          9%|Worst
     STANDARD DEVIATION:  LOADING  7% LOST DWELL 14sec|LOST LINK 12 sec         13%|link 740
-------------------------------------------------------------------------------------------
               DISTANCE  CLOCK     ELAPSED  SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                 Feet     TIME       TIME    MPH   |  DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --    <:<<<:<<<     --      --   |  DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform  2,500  6:.06:.44 <<< :<<<  <<<<<  |  DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --    6:.12:.14   5 :.30    --   |  DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400  6:.24:.59  12 :.45   11.8  |  DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700  <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500  <:<<<:<<< <<< :<<<  <<<<<  |  DWELL 3.0  or  => F=  <= 1.5  or  LINK
---------------------------------------------------| <<<<<<<<<<<> more          more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge   |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES            ---------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE       TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE       ======================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================        A Boston College LRV-1 was initially waiting afte
PARK     -  |                         |          a long stop. It left at 6:06:44.
BOYL   29%  |    THE         29% 29% 29%|        Boston College LRV-1 07:00 in 07:49 out
ARLI   21%  |    LINK        21% 25% 28%|        Riverside LRV-2 in/out 6:08
COPL   30%  |EFFICIENCIES 30% 30% 34%|        Cleve Circle LRV-2 09:11 in  09:50 out
AUDI   46%  |   WOULD        46% 46% 46%|        Brigham Circle  LRV-2  11:29 in
KENM   28%  |    BE          28% 32% 37%|        Boston College car entered 12:14 saying
BLAN   29%  |   ....         29% 29% 29%|          "Boston University" on its front sign.
BU.E   28%  |                28% 28% 28%|        The dispatcher said it would go to Packer's Corne
BU.C   22%  |                22% 22% 27%|
=======================================
     28%    AVERAGE LINK 28% 30% 32%
 GAIN IN RIDERS :
...Link Improvements only  0%  7% 14%
...Link & Dwell Improvements
                          12% 19% 33%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #90  SHK  Rider     AVER. TRIP SPEED =  10.0  LOS E
 WEDNESDAY, JUNE 21, 1989        Typed by:    SHK  FEB.26, 90  Previous Worst =   4.8  LOS F-
 ..Begin Trip  6:05 P.M.         Checked by: SHK  FEB.26, 90  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989==============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L|  STATION-STATION or "LINK"  |  WORST
9   STATIONS|    TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LI
LRV (two) T7|  IN     OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
==========================================================================================
PARK STREET  | 05:50-06:26|100%  9% 36%| 36 - 14 = 22  D| --   --   --     --     -- |131  --
BOYLSTON     | 07:46-08:03|100%  9% 36%| 17 - 10 =  7  B| 80 - 42 = 38  E 1500' 12.8 | 88  2
ARLINGTON    | 09:59-10:19|100%  9% 36%| 20 -  9 = 11  D|116 - 56 = 60  F 2000' 11.8 | 66  2
COPLEY       | 11:55-12:27|100%  9% 36%| 32 - 11 = 21  E| 96 - 44 = 52  F 1600' 11.4 |112  7
AUDITORIUM   | 14:38-15:01|100% 10% 37%| 23 -  9 = 14  D|131 - 75 = 56  D 2800' 14.6 | 85  2
KENMORE      | 17:02-17:36|100%  2% 32%| 34 -  9 = 25 F-|121 - 51 = 70 F- 2250' 12.7 |208  3
BLANDFORD    | 18:27-18:50|100%  5% 34%| 23 -  5 = 18 F=| 51 - 37 = 14  B 1100' 14.7 | 78  1
B.U.EAST     | 19:51-20:00|100%  7% 35%|  9 -  8 =  1  A| 61 - 39 = 22  C 1400' 15.6 |180  1
B.U.CENTRAL  | 20:56-21:13|100%  7% 35%| 17 -  8 =  9  C| 56 - 21 = 35 F=  750'  9.1 | 73  1
==========================================================================================
* = Best Time |  TOTALS :  --   --   --  211 - 83 =128   |712 -365 =347   13400'   -- |1021 2
    Ever ...  |  AVERAGE: 100%  7% 35%  23 -  9 = 14  D| 89 - 46 = 43  E 1675' 12.8 | 11  2
^ = Worst Time|  MAXIMUM: 100% 10% 37%  36   14   25   |131   75   70    2800' 15.6 |208Wor
    Ever .....|  MINIMUM: 100%  2% 32%   9    5    1   | 51   21   14     750'  9.1 |   dwe
~~~~~~~~~    MEAN DEVIATION:  LOADING   1% LOST DWELL   7sec|LOST LINK 16 sec          11%|Worst
      STANDARD DEVIATION:  LOADING   1% LOST DWELL   7sec|LOST LINK 18 sec          17%|link 7
------------------------------------------------------------------------------------------
                   DISTANCE   CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BE
                     Feet      TIME      TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LI
Leave Door ...       --    <:<<<:<<<     --       --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LI
Arrive Platform   2,500    6:.05:.00  <<< :<<<  <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LI
Train Arrives       --     6:.05:.50   0 :.50     --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LI
Transit Trip     13,400 ·  6:.20:.56  15 :.06    10.0  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LI
Arrive Door ...   3,800    <:<<<:<<<  <<< :<<<  <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LI
Total Trip ...   19,700    <:<<<:<<<  <<< :<<<  <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LI
Straight Line    12,500    <:<<<:<<<  <<< :<<<  <<<<<  |   DWELL 3.0   or  => F=  <= 1.5   or LI
-------------------------------------------------------| <<<<<<<<<<<> more           more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

       LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE       ========================================
   THIS TRIP  THAN LOS .. E / C / B
=======================================       Cleveland Circle : LRV-2  6:05:23 out
PARK    -   |                           |      At B.U. Central, the next train was a new
BOYL  19%   |    THE        19% 24% 28% |       dual LRV. It went express through and didn't
ARLI  17%   |    LINK       19% 24% 28% |       occupied.
COPL  17%   |EFFICIENCIES   19% 24% 28% |      Another new LRV-1 arrived at 6:24:22.
AUDI  21%   |   WOULD       21% 24% 28% |        The car was fully loaded.
KENM  16%   |    BE         19% 25% 28% |
BLAN  23%   |   ....        23% 23% 23% |
BU.E  22%   |               22% 22% 26% |
BU.C  13%   |               18% 23% 27% |
=======================================
      18%    AVERAGE LINK 20% 23% 27%
  GAIN IN RIDERS :
...Link Improvements only 11% 28% 50%
...Link & Dwell Improvements
                            12% 32% 53%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #91  SHK  Rider     AVER. TRIP SPEED =   7.6  LOS F-
..WEDNESDAY, AUGUST 9, 1989      Typed by:   SHK  JUN.16,'90  Previous Worst =   4.8  LOS F-
 ..Begin Trip  4:30 P.M.         Checked by: SHK  JUN.16,'90  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 6.15 ===1990================
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"   | WORST  |
9  STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |   LINK |
LRV (two) #7|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL   |
===============================================================================================
PARK STREET  | 32:30-34:46|100%  2% 32%|136^- 14 =122^F=| --  --   --      --     -- |131  --  |
BOYLSTON     | 35:36-35:54|100%  0% 30%| 18 - 10 =  8  C| 50 - 42 =  8  A 1500' 20.5 | 88  202 |
ARLINGTON    | 37:24-37:46|100%  3% 32%| 22 -  9 = 13  D| 90 - 56 = 34  D 2000' 15.2 | 66  260 |
COPLEY       | 38:38-39:03|100%  5% 34%| 25 - 11 = 14  D| 52 - 44 =  8  A 1600' 21.0 |112  740 |
AUDITORIUM   | 40:26-40:42|100%  7% 35%| 16 -  9 =  7  B| 83 - 75 =  8  A 2800' 23.0 | 85  225 |
KENMORE      | 44:27-44:47| 80%  3% 26%| 20 -  9 = 11  D|225 - 51 =174 F= 2250'  6.8 |208  315 |
BLANDFORD    | 45:23-45:37| 80%  3% 26%| 14 -  5 =  9  E| 36 - 37 =  0 0  1100' 20.8 | 78  147 |
B.U.EAST     | 46:29-49:55| 80%  3% 26%|206^-  8 =198^F=| 52 - 39 = 13  B 1400' 18.4 |180  154 |
B.U.CENTRAL  | 52:22-52:41| 80%  0% 24%| 19 -  8 = 11  D|147 - 21 =126 F=  750'  3.5 | 73  178 |
================================================================================================
* = Best Time  |  TOTALS :  --   --  --   476 - 83 =393  |735 -365 =370   13400'    -- |1021 2221
    Ever ...   |  AVERAGE:  91%  3% 29%  53 -  9 = 44 F= | 92 - 46 = 46  F 1675' 12.4  |  11  278|
^ = Worst Time |  MAXIMUM: 100%  7% 35% 206    14   198  |225   75  174    2800' 23.0  |208Worst |
    Ever ..... |  MINIMUM:  80%  0% 24%  14     5     7  | 36   21    0     750'  3.5  |   dwell |
~~~~~~~~~  MEAN DEVIATION:  LOADING  4% LOST DWELL 58sec|LOST LINK 52 sec         53%|Worst    |
      STANDARD DEVIATION:  LOADING  4% LOST DWELL 65sec|LOST LINK 62 sec        ERRO%|link 740 |
------------------------------------------------------------------------------------------------|
                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BEST|
                   Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK|
Leave Door ...     --     <:<<<:<<<      --      --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK|
Arrive Platform  2,500   4:.04:.00  <<< :<<<   <<<<<  |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK|
Train Arrives      --    4:.32:.30   28 :.30     --   |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK|
Transit Trip    13,400   4:.52:.22   19 :.52    7.6   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK|
Arrive Door ...  3,800   <:<<<:<<<  <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK|
Total Trip ...  19,700   <:<<<:<<<  <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK|
Straight Line   12,500   <:<<<:<<<  <<< :<<<   <<<<<  |   DWELL 3.0   or => F=  <= 1.5   or LINK|
------------------------------------------------------| <<<<<<<<<<<> more              more   |
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |    LEVEL OF SERVICE CRITERIA           |
LRV CAPACITY :  50 SEATS + 116 STANDEES              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
       LINK     SUPPOSE ALL LINK TIMES WERE
    EFFICIENCY IMPROVED SO NONE WERE WORSE
    THIS TRIP   THAN LOS .. E / C / B
==========================================
PARK    -    |                          |
BOYL   27%   |    THE         27% 27% 27% |
ARLI   19%   |    LINK        19% 20% 23% |
COPL   27%   |EFFICIENCIES    27% 27% 27% |
AUDI   31%   |   WOULD        31% 31% 31% |
KENM    8%   |    BE          18% 23% 27% |
BLAN   27%   |   ....         27% 27% 27% |
BU.E   20%   |                20% 20% 20% |
BU.C    4%   |                14% 17% 20% |
==========================================
      14%     AVERAGE LINK 21% 23% 24%
  GAIN IN RIDERS :
...Link Improvements only 50% 64% 71%
...Link & Dwell Improvements
                          76% 90% <<<
```

```
  TRIP NOTES -- OTHER TRAINS AND COMMENTS
  =======================================
This trip involved a mis-labeled train and a
return to Park Street to obtain a continuous
record for a Boston College trip.  The train taken
at 4:11 was actualy a Brigham Circle car which
said "Boston College" on the front.
Beacon LRV-2#7  06:24 in 7:15 out at Park Street
Riverside LRV-2  7:40 in  8:33 out
Cleveland Circle LRV-2  9:10 in  9:38 out
Boston College"/Cleve.Circ. LRV-2#7 11:15 in
   12:10 out  25% standees
 * * * * * TRAIN BREAKDOWN * * * * * * * * *
Train breakdown at BU Central  51:10 out with
   maintenance truck escort.
Next BC LRV-2 out at 52:00 with 10 standees.
```

```
 B O S T O N  C O L L E G E   OUTBOUND #92  SHK  Rider     AVER. TRIP SPEED =   4.3  LOS F=
.... FRIDAY, DECEMBER 1, 1989   Typed by:   SHK  JUN.15,'90  Previous Worst =   4.8  LOS F-
 ..Begin Trip  5:25 P.M.        Checked by: SHK  JUN.15,'90  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 6.15 ===1990=============
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"  | WORST
9   STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |   LI
LRV (two) BV|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS     MPH  |DWELL
==========================================================================================

PARK STREET  | 23:49-25:08|100% 95% 97%|  79 - 14 = 65 F=|  --   --   --     --    --  |131  -
BOYLSTON     | 26:09-26:40|100% 97% 98%|  31 - 10 = 21  F|  61 - 42 = 19  C 1500' 16.8 | 88  2
ARLINGTON    | 28:53-29:43|100% 98% 99%|  50 -  9 = 41 F=| 133 - 56 = 77 F- 2000' 10.3 | 66  2
COPLEY       | 30:53-32:11|100%100%100%|  78 - 11 = 67 F=|  70 - 44 = 26  C 1600' 15.6 |112  7
AUDITORIUM   | 34:04-34:58|100% 97% 98%|  54 -  9 = 45 F=| 113 - 75 = 38  C 2800' 16.9 | 85  2
KENMORE      | 36:41-53:05|100% 95% 97%| 984^-  9 =975^F=| 103 - 51 = 52  F 2250' 14.9 |208  3
BLANDFORD    | 54:16-55:03|100% 98% 99%|  47 -  5 = 42 F=|  71 - 37 = 34  E 1100' 10.6 | 78  1
B.U.EAST     | 56:48-57:20|100% 98% 99%|  32 -  8 = 24 F=| 105 - 39 = 66 F= 1400'  9.1 |180  1
B.U.CENTRAL  | 58:12-58:53|100% 97% 98%|  41 -  8 = 33 F=|  52 - 21 = 31 F-  750'  9.8 | 73  1
==========================================================================================
* = Best Time |  TOTALS :  --   --   -- 1396 - 83 =1313   |708 -365 =343   13400'   --  |1021 2
   Ever ...   |  AVERAGE: 100% 97% 98% 155 -  9 =146  F=  | 89 - 46 = 43  E 1675' 12.9 | 11  2
^ = Worst Time|  MAXIMUM: 100%100%100% 984   14  975      |133   75   77     2800' 16.9 |208Wor
   Ever .....|  MINIMUM: 100% 95% 97%  31    5   21       | 52   21   19      750'  9.1 |   dwe
~~~~~~~~~    MEAN DEVIATION:  LOADING  1% LOST DWELL207sec|LOST LINK 17 sec          21%|Worst
       STANDARD DEVIATION:  LOADING  1% LOST DWELL294sec|LOST LINK 19 sec          29%|link 7
------------------------------------------------------------------------------------------

                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME    LOS LOST TIME/BE
                   Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 => A  <=  .0 - .2 LI
Leave Door ...      --    <:<<<:<<<     --       --   |   DWELL  .4 - .8 => B  <=  .2 - .4 LI
Arrive Platform  2,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL  .8 -1.2 => C  <=  .4 - .6 LI
Train Arrives       --    5:.23:.49 <<< :<<<     --   |   DWELL 1.2 -1.6 => D  <=  .6 - .8 LI
Transit Trip    13,400    5:.58:.12  34 :.23    4.3   |   DWELL 1.6 -2.0 => E  <=  .8 -1.0 LI
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LI
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LI
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F= <= 1.5  or  LI
------------------------------------------------------|<<<<<<<<<<<> more             more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |    LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES             ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

     LINK    SUPPOSE ALL LINK TIMES WERE
  EFFICIENCY IMPROVED SO NONE WERE WORSE
   THIS TRIP  THAN LOS .. E / C / B
=====================================
PARK    -   |                            |
BOYL  67%   |   THE         67% 67% 75%  |
ARLI  41%   |   LINK        52% 65% 75%  |
COPL  62%   | EFFICIENCIES  62% 62% 76%  |
AUDI  66%   |   WOULD       66% 66% 77%  |
KENM  49%   |    BE         52% 65% 75%  |
BLAN  51%   |   ....        51% 65% 75%  |
BU.E  37%   |               52% 66% 76%  |
BU.C  40%   |               52% 66% 76%  |
=====================================
     51%    AVERAGE LINK 57% 65% 75%
 GAIN IN RIDERS :
...Link Improvements only 12% 27% 47%
...Link & Dwell Improvements
                          31% 54% 81%
```

TRIP NOTES -- OTHER TRAINS AND COMMENTS

This trip was one of the most embarrassing snafus ever observed on the Green Line. At Ke the train went the wrong way at the approach switch and ended up on the Riverside/Cleveland Circle platform. The motorman appear young an inexperienced, so platform personnel made the decision to redesignate the train for Clevelan Circle, meaning all passengers had to get off wait for the next Boston College train.

Another Cleveland Circle train came in at 6:41:00 and left at 41:25, and a Riverside tra passed trought at 41:39 in and 42:13 out.

Another Riverside LRV-1 went through with lights out at 6:47:00.

The next Boston College train arrived at48: and left over 2 minutes later at 50:35 -- jamm

A Riverside LRV-2 BV arrived at 48:55 and l at 49:46. Cleveland Cir. LRV-1 in 50:14, out 5

At BUEast, the next train arrived at 59:20, at 6:00:00, and 2 more (total 3 units) at 6:03.

```
 B O S T O N  C O L L E G E  OUTBOUND #93  SHK  Rider    AVER. TRIP SPEED =   9.8  LOS E
WEDNESDAY, FEBRUARY 21, 1990    Typed by:   SHK  FEB.21, 90  Previous Worst =   4.8  LOS F-
 ..Begin Trip  5:45 P.M.        Checked by: SHK  JUN.14, 90  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989===============
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME   L| STATION-STATION or "LINK"   | WORST
9   STATIONS|   TIME    |50\ STAND     |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED  |   LINK
LRV (two) T7|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
===========================================================================================
PARK STREET | 43:42-44:20|100% 14% 40%| 38 - 14 = 24  E| --   --   --     --     -- |131  --
BOYLSTON    | 45:46-46:01|100% 16% 41%| 15 - 10 =  5  B| 86 - 42 = 44  F 1500' 11.9 | 88  202
ARLINGTON   | 48:45-49:17|100% 31% 52%| 32 -  9 = 23 F-|164 - 56 =108 F= 2000'  8.3 | 66  260
COPLEY      | 50:18-50:47|100% 38% 57%| 29 - 11 = 18  E| 61 - 44 = 17  B 1600' 17.9 |112  740
AUDITORIUM  | 52:11-52:38|100% 33% 53%| 27 -  9 = 18  F| 84 - 75 =  9  A 2800' 22.7 | 85  225
KENMORE     | 54:03-54:40|100% 80% 86%| 37 -  9 = 28 F=| 85 - 51 = 34  D 2250' 18.0 |208  315
BLANDFORD   | 55:20-56:45|100% 80% 86%| 85^-  5 = 80^F=| 40 - 37 =  3  A 1100' 18.8 | 78  147
B.U.EAST    | 57:48-58:27|100% 80% 86%| 39 -  8 = 31 F=| 63 - 39 = 24  D 1400' 15.2 |180  154
B.U.CENTRAL | 59:05-59:43|100%100%100%| 38 -  8 = 30 F=| 38 - 21 = 17  E  750' 13.5 | 73  178
===========================================================================================
* = Best Time |  TOTALS :  --  --  --  340 - 83 =257  |621 -365 =256   13400'   -- |1021 222
    Ever ...  |  AVERAGE: 100% 52% 67%  38 -  9 = 29 F=| 78 - 46 = 32  D 1675' 14.7 |  11  278
^ = Worst Time|  MAXIMUM: 100%100%100%  85    14    80 |164   75  108    2800' 22.7 |208Worst
    Ever .....|  MINIMUM: 100% 14% 40%  15     5     5 | 38   21    3     750'  8.3 |   dwell
~~~~~~~~   MEAN DEVIATION:  LOADING 23% LOST DWELL 14sec|LOST LINK 23 sec          22%|Worst
     STANDARD DEVIATION:  LOADING 21% LOST DWELL 20sec|LOST LINK 31 sec          30%|link 740
-------------------------------------------------------------------------------------------
               DISTANCE  CLOCK     ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                 Feet     TIME      TIME     MPH  |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LINK
Leave Door ...    --    <:<<<:<<<    --       --  |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LINK
Arrive Platform 2,500   5:.40:.00 <<< :<<<  <<<<< |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LINK
Train Arrives     --    5:.43:.42   3 :.42    --  |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LINK
Transit Trip    13,400  5:.59:.05  15 :.23   9.8  |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LINK
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<  <<<<< |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LINK
Total Trip ...  19,700  <:<<<:<<< <<< :<<<  <<<<< |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LINK
Straight Line   12,500  <:<<<:<<< <<< :<<<  <<<<< |   DWELL 3.0  or  => F=  <= 1.5  or  LINK
--------------------------------------------------| <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge  |       LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES           ------------------------------------------

      LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE     ========================================
   THIS TRIP  THAN LOS .. E / C / B
========================================
PARK    -   |                          |
BOYL  20%   |   THE       21% 27% 31%  |
ARLI  14%   |   LINK      22% 27% 32%  |
COPL  38%   |EFFICIENCIES 38% 38% 38%  |
AUDI  51%   |   WOULD     51% 51% 51%  |
KENM  32%   |    BE       32% 35% 41%  |
BLAN  80%   |   ....      80% 80% 80%  |
BU.E  53%   |             53% 57% 66%  |
BU.C  48%   |             48% 57% 66%  |
========================================
      39%     AVERAGE LINK 44% 49% 54%
  GAIN IN RIDERS :
...Link Improvements only 13% 26% 38%
...Link & Dwell Improvements
                          29% 47% 65%
```

```
 B O S T O N   C O L L E G E   OUTBOUND #94  SHK  Rider    AVER. TRIP SPEED =  10.4  LOS D
.... MONDAY, JUNE 4, 1990       Typed by:    SHK  JUN.14, 90  Previous Worst =   4.8  LOS F-
 ..Begin Trip  4:45 P.M.        Checked by: SHK  JUN.14, 90  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 4.16 ===1989==============
 2.5 MILES     |  STATION   Max166 Riders| DWELL TIME    L| STATION-STATION or "LINK"    | WORST
9  STATIONS    |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED   |    LIN
LRV (two) #7   |  IN    OUT |SEATS  TOTAL| sec. TIME TIME S| sec. TIME TIME LOS     MPH   |DWELL
============================================================================================
PARK STREET    | 43:12-43:55|100% 17% 42%| 43 - 14 = 29  F| --    --    --     --     --  |131   --
BOYLSTON       | 45:12-45:33|100% 26% 48%| 21 - 10 = 11  C| 77 - 42 = 35  E 1500' 13.3  | 88   20
ARLINGTON      | 47:27-47:50|100% 34% 54%| 23 -  9 = 14  D|114 - 56 = 58  F 2000' 12.0  | 66   26
COPLEY         | 48:46-49:10|100% 34% 54%| 24 - 11 = 13  C| 56 - 44 = 12  B 1600' 19.5  |112   74
AUDITORIUM     | 50:50-51:42|100% 42% 59%| 52 -  9 = 43 F=|100 - 75 = 25  B 2800' 19.1  | 85   22
KENMORE        | 52:58-53:21|100% 95% 97%| 23 -  9 = 14  D| 76 - 51 = 25  C 2250' 20.2  |208   31
BLANDFORD      | 54:10-55:21|100% 95% 97%| 71 -  5 = 66 F=| 49 - 37 = 12  B 1100' 15.3  | 78   14
B.U.EAST       | 56:23-57:05|100%100%100%| 42 -  8 = 34 F=| 62 - 39 = 23  C 1400' 15.4  |180   15
B.U.CENTRAL    | 57:42-58:18|100%100%100%| 36 -  8 = 28 F=| 37 - 21 = 16  D  750' 13.8  | 73   17
============================================================================================
* = Best Time  |  TOTALS :   --   --   --  335 - 83 =252  |571 -365 =206    13400'   --  |1021 22
    Ever ...   |  AVERAGE: 100% 60% 72%   37 -  9 = 28 F=| 71 - 46 = 26  C 1675' 16.0  | 11  27
^ = Worst Time |  MAXIMUM: 100%100%100%   71   14   66   |114   75   58     2800' 20.2  |208Wors
    Ever .....|  MINIMUM: 100% 17% 42%   21    5   11   | 37   21   12      750' 12.0  |   dwel
~~~~~~~~   MEAN DEVIATION:  LOADING 26% LOST DWELL 15sec|LOST LINK 11 sec          15%|Worst
       STANDARD DEVIATION:  LOADING 24% LOST DWELL 17sec|LOST LINK 14 sec          19%|link 74
--------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME    LOS LOST TIME/BES
                   Feet      TIME       TIME      MPH   |   DWELL  .0 - .4 =>  A  <=   .0 - .2 LI
Leave Door ...      --    <:<<<:<<<      --        --   |   DWELL  .4 - .8 =>  B  <=   .2 - .4 LI
Arrive Platform  2,500    4:.40:.00  <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=   .4 - .6 LI
Train Arrives       --    4:.43:.12   3 :.12      --    |   DWELL 1.2 -1.6 =>  D  <=   .6 - .8 LI
Transit Trip    13,400    4:.57:.42  14 :.30     10.4   |   DWELL 1.6 -2.0 =>  E  <=   .8 -1.0 LI
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 2.0 -2.4 =>  F  <=  1.0 -1.2 LI
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 2.4 -3.0 =>  F- <=  1.2 -1.5 LI
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<    |   DWELL 3.0  or  =>  F= <=  1.5  or  LI
------------------------------------------------------- | <<<<<<<<<<<> more              more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge        |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES                ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

      LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
   EFFICIENCY IMPROVED SO NONE WERE WORSE      ========================================
   THIS TRIP  THAN LOS .. E / C / B
=====================================       4:40 PM Riverside out ...
PARK     -   |                           |    4:40 PM Cleveland Circle in   4:41 out
BOYL  23%    |     THE        23% 28% 32%|
ARLI  24%    |     LINK       25% 32% 37%|    At Kenmore, observed 40 standees also represent
COPL  42%    |  EFFICIENCIES  42% 42% 42%|    about 95% standees, for 1/2 the car. This impli
AUDI  41%    |     WOULD      41% 41% 41%|    a standee capacity of 42, plus 25 seats per
KENM  40%    |      BE        40% 40% 45%|    1/2 LRV, or LRV unit capacity of 135, rather th
BLAN  73%    |     ....       73% 73% 73%|    previous estimates of 166.  Special focus was
BU.E  61%    |                61% 61% 75%|    placed on crowding around the doorways, as the
BU.C  57%    |                57% 67% 77%|    key capacity measure -- even though there was
=====================================       unutilized standing room around the middle of
      46%   AVERAGE LINK  47% 50% 55%         the train and/or the ends.
  GAIN IN RIDERS :
...Link Improvements only  2%   9% 20%
...Link & Dwell Improvements
                          19% 30% 47%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #95  SHK  Rider    AVER. TRIP SPEED =  14.5  LOS B
...THURSDAY, JUNE 14, 1990       Typed by:   SHK  JUN.15,'90  Previous Worst =   4.8  LOS F-
 ..Begin Trip  7:00 P.M.         Checked by: SHK  JUN.15,'90  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 6.15 ===1990================
 2.5 MILES   |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK"  |  WORST  |
9  STATIONS  |   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |     LINK|
LRV (two) #7 |  IN    OUT|SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH |DWELL    |
==========================================================================================
PARK STREET  | 02:08-02:43| 24%  0%  7%| 35 - 14 = 21  D| --   --   --      --    -- |131  --
BOYLSTON     | 03:39-03:54| 32%  0% 10%| 15 - 10 =  5  B| 56 - 42 = 14  B 1500' 18.3 | 88  202
ARLINGTON    | 05:28-05:43| 36%  0% 11%| 15 -  9 =  6  B| 94 - 56 = 38  D 2000' 14.5 | 66  260
COPLEY       | 06:34-06:51| 32%  2% 11%| 17 - 11 =  6  B| 51 - 44 =  7  A 1600' 21.4 |112  740
AUDITORIUM   | 08:15-08:32| 64%  0% 19%| 17 -  9 =  8  C| 84 - 75 =  9  A 2800' 22.7 | 85  225
KENMORE      | 09:55-10:10| 52%  0% 16%| 15 -  9 =  6  B| 83 - 51 = 32  D 2250' 18.5 |208  315
BLANDFORD    | 10:50-11:01| 52%  0% 16%| 11 -  5 =  6  D| 40 - 37 =  3  A 1100' 18.8 | 78  147
B.U.EAST     | 11:54-12:03| 52%  0% 16%|  9 -  8 =  1  A| 53 - 39 = 14  B 1400' 18.0 |180  154
B.U.CENTRAL  | 12:33-12:46| 44%  0% 13%| 13 -  8 =  5  B| 30 - 21 =  9  C  750' 17.0 | 73  178
==========================================================================================
* = Best Time |  TOTALS :  --  --  --  147 - 83 = 64   |491 -365 =126   13400'   -- |1021 2221
    Ever ...  |  AVERAGE:  43%  0% 13%  16 -  9 =  7  B| 61 - 46 = 16  B 1675' 18.6 | 11  278|
^ = Worst Time|  MAXIMUM:  64%  2% 19%  35   14    21  | 94   75   38    2800' 22.7 |208Worst|
    Ever .....|  MINIMUM:  24%  0%  7%   9    5     1  | 30   21    3     750' 14.5 |   dwell|
~~~~~~~~  MEAN DEVIATION:  LOADING   4% LOST DWELL  4sec|LOST LINK 10 sec          8%|Worst   |
     STANDARD DEVIATION:  LOADING   4% LOST DWELL  5sec|LOST LINK 12 sec         13%|link 740|
------------------------------------------------------------------------------------------
                 DISTANCE   CLOCK      ELAPSED  SPEED | LOST TIME/BEST TIME   LOS LOST TIME/BEST
                   Feet      TIME       TIME     MPH  |   DWELL  .0 - .4 => A  <=  .0 - .2 LINK
Leave Door ...     --     <:<<<:<<<      --      --   |   DWELL  .4 - .8 => B  <=  .2 - .4 LINK
Arrive Platform  2,500    6:.58:.00 <<< :<<<   <<<<<  |   DWELL  .8 -1.2 => C  <=  .4 - .6 LINK
Train Arrives      --     7:.02:.08   4 :.08     --   |   DWELL 1.2 -1.6 => D  <=  .6 - .8 LINK
Transit Trip    13,400    7:.12:.33  10 :.25    14.5  |   DWELL 1.6 -2.0 => E  <=  .8 -1.0 LINK
Arrive Door ...  3,800    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 => F  <= 1.0 -1.2 LINK
Total Trip ...  19,700    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F- <= 1.2 -1.5 LINK
Straight Line   12,500    <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F= <= 1.5  or  LINK
------------------------------------------------------| <<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge      |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

     LINK    SUPPOSE ALL LINK TIMES WERE      TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE      ==========================================
  THIS TRIP  THAN LOS .. E / C / B

==========================================  6:59:10 Riverside LRV-2 #7 leaves on left side
PARK     -   |                          |        track.
BOYL    5%   |   THE        5%  5%  5%  |     59:58 Cleveland Circle LRV-2 #7 arrives on left
ARLI    6%   |   LINK       6%  7%  8%  |        side track.  7:00:36 leaves with 1/3 seated
COPL    9%   |EFFICIENCIES  9%  9%  9%  |        passengers.
AUDI   10%   |   WOULD     10% 10% 10%  |     01:50 Heath Street train arrives.
KENM   12%   |    BE       12% 13% 15%  |
BLAN   15%   |   ....      15% 15% 15%  |
BU.E   12%   |             12% 12% 12%  |
BU.C   11%   |             11% 11% 12%  |
==========================================
      10%    AVERAGE LINK 10% 10% 11%
  GAIN IN RIDERS :
...Link Improvements only  0%  0% 10%
...Link & Dwell Improvements
                            5%  8% 13%
```

```
 B O S T O N  C O L L E G E   OUTBOUND #96  SHK  Rider     AVER. TRIP SPEED =  12.9  LOS C
...THURSDAY, JUNE 21, 1990      Typed by:   SHK  JUN.25,'90  Previous Worst =   4.8  LOS F-
 ..Begin Trip  5 50 P.M.        Checked by: SHK  JUN.25,'90  Previous Best  =  17.6  LOS A
==T===R===A===I===N=====M===A===S===T===E===R=====V=e=r=s=i=o=n= 6.15 ===1990===============
 2.5 MILES  |  STATION   Max166 Riders|  DWELL TIME    L| STATION-STATION or "LINK" . | WORST
9   STATIONS|   TIME    |50\ STAND    |MEAS BEST LOST O|MEAS BEST LOST  DIST. SPEED |    LIN
LRV (two) #7|  IN    OUT |SEATS  TOTAL|sec. TIME TIME S|sec. TIME TIME LOS      MPH  |DWELL
============================================================================================
PARK STREET | 52:13-53:00|100% 25% 48%| 47 - 14 = 33  F|  --   --   --     --     -- |136   --
BOYLSTON    | 53:52-54:13|100% 25% 48%| 21 - 10 = 11  C| 52 - 42 = 10  B 1500' 19.7  | 88   20
ARLINGTON   | 55:46-56:06|100% 28% 50%| 20 -  9 = 11  D| 93 - 56 = 37  D 2000' 14.7  | 66   26
COPLEY      | 56:59-57:26|100% 32% 52%| 27 - 11 = 16  D| 53 - 44 =  9  B 1600' 20.6  |112   74
AUDITORIUM  | 58:53-59:16|100% 45% 62%| 23 -  9 = 14  D| 87 - 75 = 12  A 2800' 21.9  | 85   22
KENMORE    6:00:42-01:08|100% 35% 55%| 26 -  9 = 17  E| 86 - 51 = 35  D 2250' 17.8  |208   31
BLANDFORD   | 01:50-02:14|100% 45% 62%| 24 -  5 = 19 F=| 42 - 37 =  5  A 1100' 17.9  | 85   14
B.U.EAST    | 03:05-03:26|100% 45% 62%| 21 -  8 = 13  E| 51 - 39 = 12  B 1400' 18.7  |180   15
B.U.CENTRAL | 03:56-04:18|100% 45% 62%| 22 -  8 = 14  E| 30 - 21 =  9  C  750' 17.0  | 73   17
============================================================================================
* = Best Time |  TOTALS :  --   --   --  231 - 83 =148  |494 -365 =129   13400'    -- |1033 22
    Ever ...  |  AVERAGE: 100% 36% 56%  26 -  9 = 16  E| 62 - 46 = 16  B 1675' 18.5  |  11 27
^ = Worst Time|  MAXIMUM: 100% 45% 62%  47    14    33  | 93   75   37     2800' 21.9  |208Wors
    Ever .....|  MINIMUM: 100% 25% 48%  20     5    11  | 30   21    5      750' 14.7  |   dwel
~~~~~~~~~  MEAN DEVIATION:  LOADING  6% LOST DWELL  5sec|LOST LINK 10 sec           8% |Worst
      STANDARD DEVIATION:  LOADING  6% LOST DWELL  6sec|LOST LINK 12 sec          12% |link 74
--------------------------------------------------------------------------------------------
             DISTANCE   CLOCK      ELAPSED   SPEED  | LOST TIME/BEST TIME   LOS LOST TIME/BES
               Feet      TIME       TIME      MPH   |   DWELL  .0 - .4 =>  A  <=  .0 - .2 LIN
Leave Door ...   --    <:<<<:<<<     --        --   |   DWELL  .4 - .8 =>  B  <=  .2 - .4 LIN
Arrive Platform 2,500  5:.46:.00 <<< :<<<   <<<<<   |   DWELL  .8 -1.2 =>  C  <=  .4 - .6 LIN
Train Arrives    --    5:.52:.13   6 :.13     --    |   DWELL 1.2 -1.6 =>  D  <=  .6 - .8 LIN
Transit Trip   13,400  6:.03:.56  11 :.43    12.9   |   DWELL 1.6 -2.0 =>  E  <=  .8 -1.0 LIN
Arrive Door ...  3,800  <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.0 -2.4 =>  F  <= 1.0 -1.2 LIN
Total Trip ...  19,700  <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 2.4 -3.0 => F-  <= 1.2 -1.5 LIN
Straight Line   12,500  <:<<<:<<< <<< :<<<   <<<<<  |   DWELL 3.0  or  => F=  <= 1.5  or  LIN
----------------------------------------------------| <<<<<<<<<<<<> more            more
TRIP ENDS : Govmt. Ctr. - Hamilton St. Cambridge    |      LEVEL OF SERVICE CRITERIA
LRV CAPACITY :  50 SEATS + 116 STANDEES            ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

     LINK    SUPPOSE ALL LINK TIMES WERE     TRIP NOTES -- OTHER TRAINS AND COMMENTS
  EFFICIENCY IMPROVED SO NONE WERE WORSE     ======================================
  THIS TRIP  THAN LOS .. E / C / B
==============================               Heath St. LRV-1 out at 5:48:48.
PARK    -   |                      |         Riverside LRV-2 #7 in 50:50  out 51:45
BOYL  39%   |    THE      39% 39% 39%
ARLI  29%   |   LINK      29% 32% 37%        Note : with 25 standees, 4 were standing in the
COPL  42%   |EFFICIENCIES 42% 42% 42%               center stairwell. Aisle access was free
AUDI  45%   |   WOULD     45% 45% 45%               clear.  Doors were not impeded.
KENM  37%   |    BE       37% 41% 48%
BLAN  48%   |   ....      48% 48% 48%
BU.E  47%   |             47% 47% 47%
BU.C  43%   |             43% 43% 48%
==============================
     41%   AVERAGE LINK 41% 43% 45%
  GAIN IN RIDERS :
...Link Improvements only  0%  5% 10%
...Link & Dwell Improvements
                          5% 12% 23%
```

Appendix B

BOSTON COLLEGE OUTBOUND Version 6.25 1990 BOSTON COLLEGE

MONTH	OCT	JULY	AUG	SEPT	OCT	OCT	NOV	NOV	DEC	JAN	JAN	JAN	MAR	MAR	APR	APR	APR	MAY	JUNE	OCT
DAY	26	28	24	21	5	13	2	4	30	5	12	27	11	19	12	13	14	24	7	26
YEAR	1977	1981	1981	1981	1981	1981	1981	1981	1981	1982	1982	1982	1982	1982	1982	1982	1982	1982	1982	1982
TIME	4:30	5:40	6:00	2:00	8:00	3:45	3:20	2:55	4:50	5:25	6:25	8:15	2:20	2:00	8:30	4:50	5:25	5:20	4:20	5:30
SHK 6/25/90	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20
LOADING																				
PARK ST.	NA	86%	55%	32%	48%	83%	32%	27%	48%	48%	93%	72%	27%	65%	77%	32%	97%	65%	41%	97%
BOYLSTON	NA	90%	64%	39%	51%	90%	32%	24%	41%	53%	93%	72%	24%	65%	77%	33%	97%	79%	44%	93%
ARLINGTON	NA	93%	50%	41%	58%	79%	32%	26%	35%	58%	97%	79%	24%	65%	79%	34%	99%	86%	48%	97%
COPLEY	NA	93%	55%	53%	58%	48%	17%	24%	27%	62%	95%	58%	23%	53%	72%	32%	100%	90%	41%	95%
AUDITORIUM	NA	100%	55%	41%	58%	34%	17%	26%	29%	58%	65%	58%	20%	63%	55%	32%	100%	93%	30%	93%
KENMORE	NA	100%	36%	30%	55%	22%	15%	27%	27%	48%	58%	76%	9%	65%	41%	29%	100%	97%	26%	94%
BLANDFORD	NA	100%	38%	30%	55%	25%	12%	27%	29%	48%	58%	76%	9%	74%	41%	30%	100%	97%	26%	94%
B.U.EAST	NA	98%	40%	37%	55%	32%	12%	26%	29%	48%	58%	76%	9%	74%	53%	32%	100%	93%	15%	93%
B.U.CENTRL	NA	98%	44%	36%	55%	34%	12%	26%	27%	48%	58%	76%	9%	65%	44%	31%	100%	93%	15%	93%
AVERAGE	NA	95%	49%	38%	55%	50%	20%	26%	32%	52%	75%	71%	17%	65%	60%	32%	99%	88%	32%	94%
MAXIMUM	NA	100%	64%	53%	58%	90%	32%	27%	48%	62%	97%	79%	27%	74%	79%	34%	100%	97%	48%	97%
MINIMUM	NA	86%	36%	30%	48%	22%	12%	24%	27%	48%	58%	58%	9%	53%	41%	29%	97%	65%	15%	93%
*STAND.DEV LOADING	NA	5%	9%	7%	3%	25%	9%	1%	7%	5%	18%	7%	7%	6%	15%	1%	1%	10%	12%	2%
DWELL																				
PARK ST.	50	80	46	29	39	60	40	95	73	105	45	43	46	47	40	49	94	40	43	55
BOYLSTON	10	20	17	17	16	25	17	28	20	40	27	21	26	18	12	22	25	19	17	24
ARLINGTON	15	40	30	24	37	27	24	56	21	49	18	29	19	31	22	25	42	27	20	45
COPLEY	15	60	28	25	28	30	21	45	24	41	51	32	23	33	29	24	112	28	38	40
AUDITORIUM	10	40	23	18	25	22	22	42	23	27	24	25	25	23	34	19	85	23	25	46
KENMORE	20	45	34	20	25	30	30	52	23	26	23	30	22	45	24	26	655	25	16	37
BLANDFORD	65	35	17	14	31	25	35	49	14	18	33	23	14	30	20	74	40	18	71	62
B.U.EAST	10	55	19	21	22	17	18	59	8	20	12	skip	17	22	23	21	34	20	12	skip
B.U.CENTRL	35	20	15	28	31	21	16	51	17	18	17	31	14	21	24	23	25	19	15	33
AVERAGE	26	44	25	22	28	29	25	53	25	38	28	29	23	30	25	31	124	24	29	43
MAXIMUM	65	80	46	29	39	60	40	95	73	105	51	43	46	47	40	74	655	40	71	62
MINIMUM	10	20	15	14	16	17	16	28	8	18	12	21	14	18	12	19	25	18	12	24
*STAND DEV LOST DWELL	19%	18%	10%	5%	7%	12%	8%	17%	18%	26%	12%	6%	9%	10%	8%	17%	190%	7%	18%	11%
PARK ST. TO LINK																				
BOYLSTON	90	55	74	53	58	50	123	107	135	50	92	119	69	52	55	63	54	68	70	70
ARLINGTON	205	85	90	89	85	86	96	124	103	80	106	97	145	96	73	104	78	91	107	127
COPLEY	100	740	58	47	53	51	54	67	186	47	67	59	88	52	48	74	48	59	62	87
AUDITORIUM	130	225	97	87	89	94	108	137	139	82	126	98	111	200	81	114	90	107	109	134
KENMORE	105	290	93	76	86	84	95	100	137	83	102	98	95	51	154	274	93	82	154	110
BLANDFORD	60	50	46	40	43	41	47	57	48	40	60	57	66	63	40	47	67	42	42	60
B.U.EAST	50	55	41	39	61	89	53	101	39	45	56	42	56	54	52	93	55	56	53	56
B.U.CENTRL	50	40	63	30	30	69	37	46	52	47	29	21	98	43	46	34	31	45	36	62
AVERAGE	99	193	70	58	63	71	77	92	105	59	80	74	91	76	69	100	65	69	79	88
MAXIMUM	205	740	97	89	89	94	123	137	186	83	126	119	145	200	154	274	93	107	154	134
MINIMUM	50	40	41	30	30	41	37	46	39	40	29	21	56	43	40	34	31	42	36	56
LOST LINK STD. DEV.	48%	225%	20%	22%	20%	19%	30%	30%	50%	18%	30%	32%	27%	49%	35%	70%	20%	21%	38%	29%
EFFICIENCIES																				
LINK EFFIC.AVER.		23%	33%	30%	39%	32%	12%	13%	14%	40%	43%	44%	9%	38%	40%	15%	70%	58%	18%	48%
LOS E GAIN	-	148%	9%	0%	0%	9%	8%	8%	36%	2%	2%	7%	11%	11%	13%	27%	0%	2%	11%	10%
LOS C GAIN	-	183%	15%	0%	3%	1%	17%	31%	57%	5%	16%	18%	22%	24%	20%	47%	6%	7%	22%	31%
LOS B GAIN	-	217%	18%	7%	10%	25%	25%	54%	79%	10%	35%	27%	44%	34%	23%	67%	11%	17%	39%	50%
LINK+DWELL LOS C		NA	20%	6%	16%	27%	21%	63%	64%	35%	26%	26%	35%	33%	25%	56%	NA	13%	34%	52%
GAIN TO : LOS B		NA	33%	16%	28%	42%	35%	93%	87%	48%	46%	41%	57%	48%	35%	83%	NA	29%	49%	78%
TRIP SPEEDS																				
TRIP SPEED	9.3	4.8	11.8	14.5	12.5	11.4	11.1	7.8	8.6	11.4	10.5	11.5	9.9	10.6	12.1	8.6	5.7	12.2	10.4	8.9
miles/hour	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH
% OF BEST	53%	27%	67%	82%	71%	65%	63%	44%	49%	65%	60%	65%	56%	60%	69%	49%	32%	69%	59%	51%

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MONTH	OCT	JAN	APR	JUNE	APR	APR	APR	AUG	JAN	JAN	FEB	FEB	FEB	FEB	FEB	FEB	FEB	MAR	MAR	APR
DAY	29	17	29	3	16	23	29	26	30	31	3	5	7	10	12	25	26	4	14	7
YEAR	1982	1983	1983	1983	1985	1985	1985	1985	1986	1986	1986	1986	1986	1986	1986	1986	1986	1986	1986	1986
TIME	3:10	5:40	8:20	4:10	6:30	4:45	2:25	6:15	4:50	5:25	6:50	6:50	4:20	3:15	5:50	5:50	5:50	5:00	5:55	5:25
	#21	#22	#23	#24	#25	#26	#27	#28	#29	#30	#31	#32	#33	#34	#35	#36	#37	#38	#39	#40
LOADING									LOADING											
PARK ST.	32%	100%	58%	65%	65%	65%	24%	31%	79%	65%	6%	44%	34%	51%	76%	53%	79%	83%	83%	83%
BOYLSTON	34%	100%	58%	79%	69%	65%	36%	31%	93%	72%	8%	44%	38%	51%	79%	53%	79%	83%	86%	86%
ARLINGTON	36%	99%	53%	58%	76%	65%	38%	32%	97%	86%	12%	44%	39%	48%	83%	58%	79%	83%	86%	86%
COPLEY	34%	99%	58%	62%	76%	93%	39%	29%	79%	83%	18%	49%	58%	48%	86%	65%	79%	44%	65%	93%
AUDITORIUM	34%	99%	72%	55%	79%	93%	39%	29%	79%	79%	19%	39%	58%	48%	86%	58%	44%	41%	55%	93%
KENMORE	35%	99%	76%	32%	72%	93%	39%	29%	97%	58%	17%	36%	72%	51%	68%	55%	44%	37%	51%	93%
BLANDFORD	35%	99%	79%	32%	86%	93%	38%	29%	97%	58%	17%	15%	72%	90%	58%	55%	65%	37%	51%	93%
B.U.EAST	34%	99%	83%	30%	86%	83%	37%	30%	99%	58%	16%	15%	79%	90%	58%	51%	58%	41%	51%	93%
B.U.CENTRL	30%	99%	83%	30%	90%	83%	37%	39%	99%	65%	18%	15%	79%	90%	55%	51%	62%	41%	51%	93%
AVERAGE	34%	99%	69%	49%	78%	81%	36%	31%	91%	69%	15%	33%	59%	63%	72%	55%	65%	54%	64%	90%
MAXIMUM	36%	100%	83%	79%	90%	93%	39%	39%	99%	86%	19%	49%	79%	90%	86%	65%	79%	83%	86%	93%
MINIMUM	30%	99%	53%	30%	65%	65%	24%	29%	79%	58%	6%	15%	34%	48%	55%	51%	44%	37%	51%	83%
*STAND.DEV LOADING	2%	0%	11%	17%	8%	12%	4%	3%	9%	10%	4%	13%	17%	19%	12%	4%	14%	20%	15%	4%
	DWELL				DWELL				DWELL				DWELL				DWELL			
PARK ST.	28	131	36	47	49	48	26	28	58	70	30	33	37	39	69	49	68	exprs	96	71
BOYLSTON	13	28	14	20	18	24	29	20	41	37	23	25	16	17	33	32	25	exprs	42	28
ARLINGTON	21	66	17	29	23	27	20	25	32	44	16	26	19	40	48	34	29	exprs	47	53
COPLEY	19	65	23	24	40	39	23	17	51	55	19	40	25	exprs	61	44	45	25	44	63
AUDITORIUM	17	63	28	22	66	33	17	14	28	50	20	26	22	exprs	32	27	29	19	28	34
KENMORE	16	60	28	32	29	49	20	15	56	43	15	18	28	35	29	32	33	29	24	61
BLANDFORD	13	69	19	22	51	35	63	19	57	51	53	499	55	58	18	25	30	13	41	43
B.U.EAST	20	143	36	20	43	180	21	13	54	33	22	11	29	62	19	25	25	14	17	46
B.U.CENTRL	15	73	42	15	41	26	14	25	40	44	16	26	24	44	20	28	30	14	28	40
AVERAGE	18	78	27	26	40	51	26	20	46	47	24	78	28	42	37	33	35	19	41	49
MAXIMUM	28	143	42	47	66	180	63	28	58	70	53	499	55	62	69	49	68	29	96	71
MINIMUM	13	28	14	15	18	24	14	13	28	33	15	11	16	17	18	25	25	13	17	28
*STAND DEV LOST DWELL	4%	34%	9%	9%	14%	46%	14%	5%	11%	10%	11%	149%	11%	14%	18%	8%	13%	6%	22%	13
PARK ST. TO	LINK				LINK				LINK				LINK				LINK			
BOYLSTON	53	89	62	49	202	48	74	137	57	68	64	57	79	61	87	70	44	75	73	48
ARLINGTON	108	116	95	93	260	88	113	107	106	121	95	105	108	107	98	197	92	130	152	106
COPLEY	63	78	73	49	143	66	59	85	84	73	54	70	104	46	62	107	57	132	97	110
AUDITORIUM	95	105	95	85	95	89	105	108	132	105	101	101	102	115	190	138	103	147	146	92
KENMORE	83	315	79	110	202	77	104	96	113	90	95	103	212	114	167	107	102	139	133	87
BLANDFORD	42	60	41	39	43	45	42	42	60	51	50	605	45	47	46	56	59	98	66	53
B.U.EAST	43	50	76	40	63	57	134	44	113	67	63	82	46	124	57	56	77	82	89	51
B.U.CENTRL	62	35	32	34	40	36	178	178	46	39	50	49	32	37	42	52	58	46	58	32
AVERAGE	69	106	69	62	131	63	101	100	89	77	72	147	91	81	94	98	74	106	102	72
MAXIMUM	108	315	95	110	260	89	178	178	132	121	101	605	212	124	190	197	103	147	152	110
MINIMUM	42	35	32	34	40	36	42	42	46	39	50	49	32	37	42	52	44	46	58	32
LOST LINK STD. DEV.	23%	83%	22%	27%	78%	19%	41%	42%	30%	26%	20%	174%	54%	34%	52%	47%	21%	34%	35%	28
	EFFICIENCIES								EFFICIENCIES											
LINK EFFIC.	23%	46%	46%	36%	27%	58%	16%	14%	47%	41%	10%	NA	30%	35%	35%	26%	40%	23%	29%	57
LOS E GAIN	4%	39%	0%	3%	74%	0%	38%	36%	9%	2%	0%	NA	20%	11%	20%	19%	2%	22%	17%	4
LOS C GAIN	9%	57%	7%	8%	104%	2%	56%	57%	30%	15%	10%	NA	40%	26%	40%	42%	15%	57%	48%	14
LOS B GAIN	17%	70%	17%	17%	126%	12%	69%	71%	49%	27%	10%	NA	53%	43%	57%	62%	27%	83%	69%	25
LINK+ C+	15%	NA	18%	19%	NA	43%	59%	51%	60%	47%	12%	NA	45%	48%	52%	53%	34%	46%	68%	51
DWELL B+	24%	NA	34%	31%	NA	63%	76%	68%	86%	67%	23%	NA	63%	68%	76%	79%	52%	69%	97%	70
	TRIP SPEEDS								TRIP SPEEDS											
TRIP SPEED	13.0	6.1	12.0	12.7	6.6	9.6	8.8	9.5	8.3	9.1	11.8	4.8	9.4	10.0	8.5	8.8	10.3	9.5	7.8	9.2
miles/hour	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH
% OF BEST	74%	35%	68%	72%	38%	55%	50%	54%	47%	52%	67%	27%	53%	57%	48%	50%	59%	54%	44%	52%

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MONTH	APR	AUG,	AUG	SEPT	SEPT	OCT	NOV	DEC	DEC	JAN	JAN	FEB	APR	JUNE	JAN	JAN	FEB	FEB	MAR	APR
DAY	11	14	18	10	17	13	26	9	15	26	29	4	17	23	4	20	4	18	24	4
YEAR	1986	1986	1986	1986	1986	1986	1986	1986	1986	1987	1987	1987	1987	1987	1988	1988	1988	1988	1988	1988
TIME	5:15	5:40	1:00	5:30	5:20	2:10	5:15	10:50	10:45	10:40	MIDN	8:00	7:55	6:50	6:55	5:30	5:05	4:55	5:05	5:50
	#41	#42	#43	#44	#45	#46	#47	#48	#49	#50	#51	#52	#53	#54	#55	#56	#57	#58	#59	#60
	LOADING								LOADING											
PARK ST.	83%	44%	8%	72%	58%	30%	93%	23%	17%	14%	12%	7%	65%	41%	27%	17%	36%	65%	86%	36%
BOYLSTON	86%	46%	7%	72%	58%	30%	93%	24%	17%	16%	14%	7%	65%	41%	28%	20%	36%	66%	90%	38%
ARLINGTON	97%	41%	8%	72%	44%	30%	90%	26%	18%	20%	19%	8%	65%	48%	31%	32%	38%	65%	90%	36%
COPLEY	93%	36%	12%	58%	39%	24%	90%	27%	20%	18%	24%	7%	53%	44%	35%	37%	35%	64%	86%	36%
AUDITORIUM	72%	36%	11%	58%	39%	24%	90%	29%	24%	22%	22%	7%	65%	37%	30%	38%	33%	62%	79%	34%
KENMORE	51%	35%	11%	36%	34%	15%	90%	32%	24%	22%	20%	5%	83%	30%	30%	38%	34%	61%	72%	36%
BLANDFORD	51%	35%	12%	36%	39%	14%	90%	32%	24%	22%	22%	6%	83%	29%	30%	37%	34%	62%	76%	38%
B.U.EAST	51%	34%	12%	36%	35%	23%	90%	34%	29%	22%	22%	10%	83%	32%	30%	36%	35%	62%	76%	39%
B.U.CENTRL	51%	36%	12%	39%	45%	25%	90%	36%	38%	30%	22%	12%	83%	36%	30%	36%	34%	61%	72%	42%
AVERAGE	71%	38%	10%	53%	43%	24%	91%	29%	23%	21%	20%	8%	72%	38%	30%	32%	35%	63%	81%	37%
MAXIMUM	97%	46%	12%	72%	58%	30%	93%	36%	38%	30%	24%	12%	83%	48%	35%	38%	38%	66%	90%	42%
MINIMUM	51%	34%	7%	36%	34%	14%	90%	23%	17%	14%	12%	5%	53%	29%	27%	17%	33%	61%	72%	34%
*STAND.DEV LOADING	19%	4%	2%	16%	8%	6%	1%	4%	6%	4%	4%	2%	11%	6%	2%	8%	1%	2%	7%	2%
	DWELL				DWELL				DWELL				DWELL				DWELL			
PARK ST.	64	42	18	78	55	38	77	27	25	19	21	19	62	47	52	79	27	64	74	42
BOYLSTON	38	20	15	27	12	13	20	14	11	16	10	11	17	20	16	31	15	23	24	12
ARLINGTON	62	25	12	34	21	19	44	14	14	16	15	14	24	26	20	22	23	25	45	23
COPLEY	70	59	13	58	28	20	44	17	19	13	16	21	29	38	42	55	24	31	38	25
AUDITORIUM	33	27	9	34	17	14	41	18	20	16	13	13	27	71	23	19	17	23	29	14
KENMORE	208	29	14	140	21	16	48	18	12	18	15	14	25	25	20	20	24	30	32	21
BLANDFORD	31	30	9	16	52	19	22	13	19	9	9	17	37	18	15	18	14	29	79	25
B.U.EAST	37	17	9	97	30	17	28	20	29	skip	13	16	32	17	12	18	13	31	46	21
B.U.CENTRL	29	34	18	27	24	23	30	18	31	11	8	20	22	15	14	21	12	24	27	26
AVERAGE	64	31	13	57	29	20	39	18	20	15	13	16	31	31	24	31	19	31	44	23
MAXIMUM	208	59	18	140	55	38	77	27	31	19	21	21	62	71	52	79	27	64	79	42
MINIMUM	29	17	9	16	12	13	20	13	11	9	8	11	17	15	12	18	12	23	24	12
*STAND DEV LOST DWELL	53%	12%	3%	39%	14%	7%	16%	4%	7%	3%	4%	3%	12%	17%	13%	20%	5%	12%	19%	8%
PARK ST. TO	LINK				LINK				LINK				LINK				LINK			
BOYLSTON	48	50	61	91	86	46	50	47	53	42	45	48	84	51	67	126	53	49	53	45
ARLINGTON	98	89	109	106	182	79	164	83	95	82	63	96	110	97	135	152	164	91	101	98
COPLEY	58	71	89	51	171	52	105	49	54	51	44	76	70	56	56	345	117	56	58	70
AUDITORIUM	95	91	114	90	139	120	163	88	111	80	75	119	106	130	161	199	136	103	108	145
KENMORE	93	99	85	86	131	121	94	84	110	79	70	98	92	90	127	107	114	98	98	135
BLANDFORD	53	40	51	47	44	39	46	39	43	44	38	49	46	42	40	146	48	45	38	43
B.U.EAST	55	51	45	55	60	64	69	51	42	39	40	72	55	48	51	154	63	86	46	74
B.U.CENTRL	31	36	38	34	126	34	173	36	29	49	28	35	48	33	33	52	51	32	28	39
AVERAGE	66	66	74	70	117	69	108	60	67	58	50	74	76	68	84	160	93	70	66	81
MAXIMUM	98	99	114	106	182	121	173	88	111	82	75	119	110	130	161	345	164	103	108	145
MINIMUM	31	36	38	34	44	34	46	36	29	39	28	35	46	33	33	52	48	32	28	39
*STD.LOST L STD. DEV.	24%	23%	27%	25%	47%	32%	49%	20%	31%	17%	16%	27%	24%	31%	46%	80%	42%	26%	29%	39%
	EFFICIENCIES								EFFICIENCIES											
LINK EFFIC.	49%	26%	6%	35%	17%	18%	38%	22%	16%	16%	18%	5%	43%	25%	16%	9%	17%	41%	56%	21%
LOS E GAIN	0%	0%	0%	0%	41%	6%	39%	0%	0%	6%	0%	0%	2%	0%	13%	89%	18%	2%	0%	5%
LOS C GAIN	6%	8%	17%	11%	71%	17%	66%	5%	6%	6%	0%	0%	14%	12%	31%	133%	41%	12%	7%	24%
LOS B GAIN	14%	15%	33%	20%	94%	28%	87%	9%	13%	13%	0%	20%	30%	20%	44%	178%	59%	20%	14%	38%
LINK+ C+	65%	23%	16%	63%	74%	16%	79%	7%	17%	5%	0%	8%	29%	22%	34%	NA	36%	24%	42%	30%
DWELL B+	84%	38%	29%	83%	100+%	27%	100+%	15%	27%	11%	2%	22%	49%	37%	51%	NA	54%	38%	57%	49%
	TRIP SPEEDS								TRIP SPEEDS											
TRIP SPEED	8.4	11.7	13.1	8.7	7.7	12.8	7.6	14.7	13.2	15.8	17.6	12.6	10.5	11.2	10.4	5.8	10.0	11.1	10.1	10.9
miles/hour	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH
% OF BEST	48%	66%	74%	49%	44%	73%	43%	84%	75%	90%	100%	72%	60%	64%	59%	33%	57%	63%	57%	62%

BOSTON COLLEGE OUTBOUND Version 6.25 1990 BOSTON COLLEGE

MONTH	MAY	MAY	MAY	JUNE	JULY	AUG	AUG	AUG	SEPT	SEPT	SEPT	OCT	OCT	NOV	DEC	DEC	DEC	JAN	JAN	JAN
DAY	12	18	23	9	8	2	10	17	15	19	29	20	26	18	8	12	30	11	12	27
YEAR	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1988	1989	1989	1989
TIME	2:05	5:20	5:50	5:10	5:50	9:35	5:40	5:10	6:20	4:55	5:05	4:00	6:10	1:30	3:50	7:30	8:10	5:30	2:20	5:20
	#61	#62	#63	#64	#65	#66	#67	#68	#69	#70	#71	#72	#73	#74	#75	#76	#77	#78	#79	#80
	LOADING								LOADING								LOAD			
PARK ST.	25%	55%	55%	41%	26%	4%	15%	79%	79%	20%	41%	23%	34%	44%	32%	29%	4%	37%	15%	39%
BOYLSTON	24%	55%	55%	43%	25%	4%	26%	86%	83%	29%	48%	25%	36%	44%	34%	29%	4%	41%	14%	44%
ARLINGTON	27%	55%	51%	42%	22%	7%	32%	93%	93%	37%	48%	28%	36%	48%	36%	34%	4%	41%	20%	46%
COPLEY	25%	63%	51%	52%	23%	7%	41%	93%	93%	41%	50%	18%	29%	48%	48%	33%	7%	45%	34%	44%
AUDITORIUM	24%	63%	51%	54%	20%	7%	38%	93%	93%	44%	55%	31%	28%	48%	73%	33%	5%	44%	33%	41%
KENMORE	24%	48%	51%	52%	12%	7%	38%	79%	65%	48%	58%	31%	28%	44%	73%	30%	5%	37%	45%	30%
BLANDFORD	23%	48%	55%	55%	14%	7%	47%	79%	83%	46%	58%	37%	32%	51%	73%	35%	5%	36%	58%	30%
B.U.EAST	23%	48%	55%	55%	14%	7%	47%	79%	86%	65%	58%	35%	32%	51%	65%	36%	4%	34%	58%	29%
B.U.CENTRL	24%	48%	55%	48%	14%	6%	47%	79%	90%	83%	58%	36%	30%	51%	65%	35%	2%	34%	58%	29%
AVERAGE	24%	54%	53%	49%	19%	6%	37%	84%	85%	46%	53%	29%	32%	48%	55%	33%	4%	39%	37%	37%
MAXIMUM	27%	63%	55%	55%	26%	7%	47%	93%	93%	83%	58%	37%	36%	51%	73%	36%	7%	45%	58%	46%
MINIMUM	23%	48%	51%	41%	12%	4%	15%	79%	65%	20%	41%	18%	28%	44%	32%	29%	2%	34%	14%	29%
*STAND.DEV LOADING	1%	6%	2%	5%	5%	1%	10%	6%	9%	18%	6%	6%	3%	3%	17%	3%	1%	4%	17%	7%
	DWELL				WELL				DWELL				DWELL				DWELI			
PARK ST.	30	48	41	66	43	20	40	61	48	83	33	48	72	70	33	32	14	59	28	58
BOYLSTON	10	18	20	18	23	11	25	30	21	22	17	17	14	22	32	15	11	30	16	21
ARLINGTON	27	17	18	27	23	14	16	38	28	29	29	18	17	30	32	17	9	26	19	26
COPLEY	17	31	17	38	17	26	36	52	44	28	28	25	22	25	29	22	11	34	21	29
AUDITORIUM	15	32	21	35	20	15	23	38	33	23	22	19	15	20	30	20	10	31	19	26
KENMORE	20	34	18	27	16	11	22	62	42	28	24	218	23	21	24	27	10	49	41	28
BLANDFORD	11	57	67	21	14	23	19	25	20	57	35	60	19	39	22	29	8	147	53	33
B.U.EAST	11	19	15	18	14	13	25	23	20	54	30	42	17	49	38	20	9	10	19	19
B.U.CENTRL	15	12	21	21	9	15	16	19	26	32	25	18	16	30	25	16	9	16	22	17
AVERAGE	17	30	26	30	20	16	25	39	31	40	27	30	24	34	29	22	10	45	26	29
MAXIMUM	30	57	67	66	43	26	40	62	48	83	35	60	72	70	38	32	14	147	53	58
MINIMUM	10	12	15	18	9	11	16	19	20	22	17	17	14	20	22	15	8	10	16	17
*STAND DEV LOST DWELL	7%	14%	16%	14%	9%	5%	8%	15%	10%	19%	5%	15%	17%	16%	5%	6%	2%	39%	12%	11
PARK ST. TO	LINK				LINK				LINK				LINK				LINK			
BOYLSTON	73	52	70	82	76	45	74	89	99	57	47	75	80	48	76	50	59	58	77	53
ARLINGTON	112	113	102	125	168	98	147	112	142	101	93	133	104	107	116	93	89	98	104	102
COPLEY	68	85	86	50	58	53	92	50	104	56	127	81	65	141	72	58	52	51	61	55
AUDITORIUM	139	95	188	118	126	106	117	100	126	99	96	105	93	160	129	103	96	84	150	111
KENMORE	102	90	99	114	89	88	98	98	97	96	86	95	85	132	94	94	89	95	96	108
BLANDFORD	37	39	52	41	44	53	41	40	47	42	43	45	41	40	48	47	41	45	62	52
B.U.EAST	56	51	131	45	54	80	49	50	72	62	72	60	61	50	56	61	61	100	73	63
B.U.CENTRL	36	26	66	36	37	27	28	35	33	42	29	44	43	38	46	45	47	34	54	46
AVERAGE	78	69	99	76	82	69	81	72	90	69	74	80	72	90	80	69	67	71	85	74
MAXIMUM	139	113	188	125	168	106	147	112	142	101	127	133	104	160	129	103	96	100	150	111
MINIMUM	36	26	52	36	37	27	28	35	33	42	29	44	41	38	46	45	41	34	54	46
*STD.LOST L STD. DEV.	34%	29%	41%	36%	42%	26%	38%	29%	35%	24%	31%	29%	21%	48%	29%	22%	20%	25%	30%	26
	EFFICIENCIES								EFFICIENCIES											
LINK EFFIC.	17%	37%	26%	31%	13%	4%	21%	53%	43%	30%	33%	17%	20%	24%	32%	22%	3%	25%	20%	23
LOS E GAIN	0%	3%	19%	6%	8%	0%	10%	2%	12%	0%	6%	0%	5%	21%	0%	0%	0%	4%	0%	4
LOS C GAIN	18%	14%	46%	19%	23%	0%	24%	17%	33%	10%	18%	18%	15%	42%	16%	9%	0%	16%	25%	9
LOS B GAIN	35%	22%	69%	35%	38%	25%	38%	26%	53%	20%	27%	29%	25%	58%	31%	14%	0%	24%	40%	22
LINK+ C+	15%	26%	47%	34%	29%	6%	28%	39%	42%	33%	28%	35%	20%	52%	30%	13%	0%	50%	32%	21
DWELL B+	31%	37%	69%	53%	43%	16%	46%	55%	66%	49%	43%	52%	35%	74%	51%	23%	0%	66%	51%	38
	TRIP				SPEEDS				TRIP				SPEEDS							
TRIP SPEED	11.9	11.2	9.0	10.5	11.0	13.3	10.6	10.0	9.3	10.3	11.2	10.2	11.8	9.1	10.3	12.5	14.8	9.6	10.2	11.0
miles/hour	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH
% OF BEST	68%	64%	51%	60%	63%	76%	60%	57%	53%	59%	64%	58%	67%	52%	59%	71%	84%	55%	58%	63%

BOSTON COLLEGE OUTBOUND Version 6.25 1990 BOSTON COLLEGE

MONTH	FEB	MAR	MAR	MAR	MAR	MAR	APR	APR	JUNE	JUNE	AUG	DEC	FEB	JUNE	JUNE	JUNE	AVERAGE	MAX	MIN	STANDARD DEV. (% OF AVER)
DAY	28	1	15	16	21	29	12	14	13	21	9	1	21	4	14	21				
YEAR	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1989	1990	1990	1990	1990				
TIME	6:20	6:00	5:55	4:00	1:30	5:00	6:10	3:00	6:15	6:05	4:30	5:25	5:45	4:45	7:00	5:50				
	#81	#82	#83	#84	#85	#86	#87	#88	#89	#90	#91	#92	#93	#94	#95	#96				
	LOADING								LOADING								LOAD			
PARK ST.	42%	16%	29%	37%	32%	14%	37%	17%	37%	36%	32%	97%	40%	42%	7%	48%	46%	100%	4%	26%
BOYLSTON	41%	16%	29%	41%	32%	20%	44%	20%	37%	36%	30%	98%	41%	48%	10%	48%	48%	100%	4%	26%
ARLINGTON	37%	18%	30%	43%	32%	20%	45%	20%	44%	36%	32%	99%	52%	54%	11%	50%	50%	99%	4%	26%
COPLEY	30%	14%	32%	45%	32%	23%	50%	22%	58%	36%	34%	100%	57%	54%	11%	52%	49%	100%	7%	25%
AUDITORIUM	30%	13%	32%	48%	32%	23%	52%	24%	48%	37%	35%	98%	53%	59%	19%	62%	48%	100%	5%	24%
KENMORE	12%	12%	32%	51%	36%	24%	54%	36%	37%	32%	26%	97%	86%	97%	16%	55%	46%	100%	5%	26%
BLANDFORD	20%	12%	30%	72%	38%	26%	55%	50%	36%	34%	26%	99%	86%	97%	16%	62%	48%	100%	5%	27%
B.U.EAST	27%	12%	32%	86%	37%	25%	59%	54%	35%	35%	26%	99%	86%	100%	16%	62%	49%	100%	4%	27%
B.U.CENTRL	34%	11%	34%	93%	39%	23%	62%	55%	35%	35%	24%	98%	100%	100%	13%	62%	50%	100%	2%	27%
																	LOADING			
AVERAGE	30%	14%	31%	57%	34%	22%	51%	30%	41%	35%	29%	98%	67%	72%	13%	56%	48%	99%	4%	50%
MAXIMUM	42%	18%	34%	93%	39%	26%	62%	42%	58%	37%	35%	100%	100%	100%	19%	62%	59%	100%	7%	46%
MINIMUM	12%	11%	29%	37%	32%	14%	37%	12%	35%	32%	24%	97%	40%	42%	7%	48%	38%	99%	2%	61%
*STAND.DEV LOADING	9%	2%	2%	20%	3%	3%	7%	9%	7%	1%	4%	1%	21%	24%	4%	6%	8%	25%	0%	75%
																	AVER.	MAX	MIN	STDEV
	DWELL				DWELL				DWELL				DWEE				DWELL			
PARK ST.	44	74	38	35	45	31	45	31	72	36	136	79	38	43	35	47	51	136	14	45%
BOYLSTON	16	20	14	13	13	22	22	13	21	17	18	31	15	21	15	21	21	42	10	34%
ARLINGTON	20	19	27	21	24	17	26	20	24	20	22	50	32	23	15	20	27	66	9	42%
COPLEY	31	23	22	31	35	23	30	23	28	32	25	78	29	24	17	27	33	112	11	48%
AUDITORIUM	21	25	16	25	13	15	26	15	21	23	16	54	27	52	17	23	26	85	9	50%
KENMORE	27	26	16	35	18	22	25	19	29	34	20	984	37	23	15	26	47	984	10	252%
BLANDFORD	22	54	17	59	5	27	24	28	19	23	14	47	85	71	11	24	34	147	5	66%
B.U.EAST	16	38	21	47	16	17	23	17	21	9	206	32	39	42	9	21	30	206	8	103%
B.U.CENTRL	21	13	20	30	20	17	20	22	18	17	19	41	38	36	13	22	24	73	8	42%
																	DWELL			
AVERAGE	24	32	21	33	21	21	27	24	28	23	53	155	38	37	16	26	33	155	10	61%
MAXIMUM	44	74	38	59	45	31	45	44	72	36	206	984	85	71	35	47	76	984	14	155%
MINIMUM	16	13	14	13	5	15	20	16	18	9	14	31	15	21	9	20	16	33	5	35%
*STAND DEV LOST DWELL	8%	19%	7%	13%	12%	5%	7%	8%	16%	8%	65%	294%	18%	16%	7%	8%	20	294	2	188%
																	AVER.	MAX	MIN	STDEV
PARK ST. TO	LINK				LINK				LINK				LINN				LINK			
BOYLSTON	51	57	51	52	48	65	53	53	53	80	50	61	86	77	56	52	68	202	42	36%
ARLINGTON	88	206	123	94	83	118	104	128	99	116	90	133	164	114	94	93	112	260	63	27%
COPLEY	53	101	171	59	76	158	60	54	65	96	52	70	61	56	51	53	84	740	44	94%
AUDITORIUM	119	148	111	95	88	103	102	89	95	131	83	113	84	100	84	87	114	225	75	25%
KENMORE	113	96	114	93	90	75	94	89	87	121	225	103	83	76	83	86	109	315	51	40%
BLANDFORD	47	49	42	51	39	39	42	40	48	51	36	71	40	49	40	42	54	605	36	109%
B.U.EAST	62	64	79	53	72	58	66	55	50	61	52	105	53	62	53	51	63	154	39	34%
B.U.CENTRL	38	38	38	37	55	50	33	52	33	56	147	52	30	37	30	30	47	178	21	63%
																	LINK			
AVERAGE	71	95	91	67	69	83	69	71	66	89	92	89	75	71	61	62	82	193	50	26%
MAXIMUM	119	206	171	95	90	158	104	119	99	131	225	133	164	114	94	93	148	740	75	62%
MINIMUM	38	38	38	37	39	39	33	38	33	51	36	52	30	37	30	30	39	58	21	19%
LOST LINK STD. DEV.	29%	54%	44%	22%	18%	38%	26%	29%	23%	30%	60%	27%	39%	24%	21%	22%	37	225	16	76%
	EFFICIENCIES								EFFICIENCIES											
LINK EFFIC.	19%	7%	16%	39%	23%	12%	34%	22%	28%	18%	14%	51%	39%	46%	10%	41%	28%	70%	3%	51%
LOS E GAIN	5%	14%	19%	0%	0%	17%	0%	5%	0%	11%	50%	12%	13%	2%	0%	0%	12%	148%	0%	177%
LOS C GAIN	11%	43%	38%	5%	9%	25%	9%	14%	7%	28%	64%	27%	26%	9%	0%	5%	25%	183%	0%	113%
LOS B GAIN	21%	57%	50%	13%	22%	42%	15%	23%	14%	50%	71%	47%	38%	20%	10%	10%	39%	217%	0%	87%
LINK+ C+	15%	51%	38%	25%	15%	21%	17%	17%	19%	32%	64%	54%	47%	30%	8%	12%	33%	79%	0%	55%
DWELL B+	33%	72%	56%	37%	27%	36%	30%	27%	33%	53%	71%	81%	65%	47%	13%	23%	48%	97%	0%	45%
	TRIP SPEEDS								TRIP SPEEDS											
TRIP SPEED	11.8	8.7	10.1	11.3	12.6	10.8	11.7	12.5	11.8	10.0	7.6	4.3	9.8	10.4	14.5	12.9	10.4	17.6	4.3	22%
miles/hour	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	-
% OF BEST	67%	49%	57%	64%	72%	61%	66%	71%	67%	57%	43%	24%	56%	59%	82%	73%	59%	100%	24%	-

BOSTON COLLEGE

MONTH DAY YEAR TIME	AVERAGE LOADINGS, DWELL AND LINKS TRIPS		TRIPS	
	1-48	49-96	1-77	78-96
	LOADING			
PARK ST.	58%	35%	49%	34%
BOYLSTON	60%	37%	51%	36%
ARLINGTON	61%	39%	53%	38%
COPLEY	58%	41%	51%	41%
AUDITORIUM	55%	42%	50%	41%
KENMORE	51%	41%	47%	43%
BLANDFORD	53%	44%	49%	46%
B.U.EAST	53%	45%	49%	48%
B.U.CENTRL	53%	46%	50%	49%
	LOADING			
AVERAGE	56%	41%	50%	42%
MAXIMUM	100%	100%	100%	100%
MINIMUM	6%	2%	2%	7%
*STAND.DEV LOADING	76%	71%	71%	87%
	DWELL			
	1-48	49-96	1-77	78-96
PARK ST.	54	48	51	51
BOYLSTON	23	19	21	19
ARLINGTON	31	23	28	24
COPLEY	37	29	34	30
AUDITORIUM	29	24	27	24
KENMORE	49	45	39	78
BLANDFORD	34	33	32	40
B.U.EAST	33	27	29	33
B.U.CENTRL	27	20	24	22
	DWELL			
AVERAGE	36%	30%	32%	36%
MAXIMUM	655%	984%	655%	984%
MINIMUM	8%	5%	8%	5%
*STAND DEV LOST DWELL	166%	207%	134%	319%
	LINK			
PARK ST. TO	-	-	-	-
BOYLSTON	73	62	70	64
ARLINGTON	111	112	108	116
COPLEY	90	78	86	82
AUDITORIUM	115	113	113	116
KENMORE	119	100	115	102
BLANDFORD	62	47	60	47
B.U.EAST	63	64	61	66
B.U.CENTRL	54	42	51	43
	LINK			
AVERAGE	86	77	83	80
MAXIMUM	164	132	156	137
MINIMUM	40	38	39	38
LOST LINK STD. DEV.	42%	32%	39%	33%
LINK EFFIC.	33	24	31	24
LOS E GAIN	15	9	14	8
LOS C GAIN	29	22	27	22
LOS B GAIN	42	35	41	36
LINK+ C+	38	28	36	28
DWELL B+	56	40	51	44
TRIP SPEED miles/hour	9.8 MPH	11.0 MPH	10.3 MPH	10.6 MPH
% OF BEST				

Appendix C

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                SPEED AND EFFICIENCY OF THE GREEN LINE
          BOSTON COLLEGE BRANCH, OUTBOUND  96 TRIPS  1977-1990
===========================================================================

 TIME TRIP                ZERO............... 1/2 OF BEST ...............BEST
OF DAY  #                  |<----------- Range of Performance -------------->|
======  ==

1:00  #43 SPEED        13.1 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       10% | LLLLL
          EFFICIENCY     7% | *******

1:30  #74 SPEED         9.1 | SSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       48% | LLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY    25% | *************************

1:30  #85 SPEED        11.8 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       34% | LLLLLLLLLLLLLLLLL
          EFFICIENCY    23% | ***********************

2:00  #4  SPEED        14.5 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       38% | LLLLLLLLLLLLLLLLLLL
          EFFICIENCY    31% | *******************************

2:00  #14 SPEED        10.6 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       65% | LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY    39% | ***************************************

2:05  #61 SPEED        11.9 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       24% | LLLLLLLLLLLL
          EFFICIENCY    16% | ****************

2:10  #46 SPEED        12.8 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       24% | LLLLLLLLLLLL
          EFFICIENCY    17% | *****************

2:20  #13 SPEED         9.9 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       17% | LLLLLLLLL
          EFFICIENCY    10% | **********

2:20  #79 SPEED        10.2 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       37% | LLLLLLLLLLLLLLLLLLL
          EFFICIENCY    21% | *********************

2:25  #27 SPEED         8.8 | SSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       36% | LLLLLLLLLLLLLLLLLL
          EFFICIENCY    18% | ******************

2:55  #8  SPEED         7.8 | SSSSSSSSSSSSSSSSSSSSSSS
          LOADING       26% | LLLLLLLLLLLLL
          EFFICIENCY    12% | ************

3:00  #88 SPEED        11.3 | SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING       30% | LLLLLLLLLLLLLLL
          EFFICIENCY    19% | *******************
```

TRIP SPEED

TRIP SPEED

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 TIME TRIP               ZERO................ 1/2 OF BEST ..............BEST
OF DAY  #                 |<----------- Range of Performance ------------->
====== ==

3:10  #21 SPEED          13.0 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         34% |LLLLLLLLLLLLLLLLL
          EFFICIENCY      25% |*************************

3:10  #34 SPEED          10.0 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         63% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY      36% |************************************

3:20  #7  SPEED          11.1 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         20% |LLLLLLLLLL
          EFFICIENCY      13% |*************

3:45  #6  SPEED          11.4 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         50% |LLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY      32% |********************************

3:50  #75 SPEED          10.3 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         75% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY      44% |********************************************

4:00  #72 SPEED          10.2 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         29% |LLLLLLLLLLLLLLL
          EFFICIENCY      17% |*****************

4:00  #84 SPEED          11.3 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         57% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY      37% |*************************************

4:10  #24 SPEED          12.7 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         49% |LLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY      35% |***********************************

4:20  #19 SPEED          10.4 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         32% |LLLLLLLLLLLLLLLL
          EFFICIENCY      19% |*******************

4:20  #33 SPEED           9.4 |SSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         59% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY      32% |********************************

4:30  #1  SPEED           9.3 |SSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING          NA     NA
          EFFICIENCY       NA     NA

4:30  #91 SPEED           7.6 |SSSSSSSSSSSSSSSSSSSSSSS
          LOADING         29% |LLLLLLLLLLLLLLL
          EFFICIENCY      13% |*************

4:45  #26 SPEED           9.6 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING         81% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY      44% |********************************************
```

TRIP SPEED

TRIP SPEED

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 TIME TRIP               ZERO............... 1/2 OF BEST ...............BEST
OF DAY  #                  |<----------- Range of Performance ------------->
====== ==                  |

4:45  #94 SPEED       10.4 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      72% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   43% |*******************************************

4:50  #9  SPEED        8.6 |SSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      32% |LLLLLLLLLLLLLLLL
          EFFICIENCY   16% |****************

4:50  #16 SPEED        8.6 |SSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      32% |LLLLLLLLLLLLLLLL
          EFFICIENCY   16% |****************

4:50  #29 SPEED        8.3 |SSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      91% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   43% |*******************************************

4:55  #58 SPEED       11.1 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      58% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   37% |*************************************

4:55  #70 SPEED       10.3 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      46% |LLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   27% |***************************

5:00  #38 SPEED        9.5 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      54% |LLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   29% |*****************************

5:00  #86 SPEED        8.7 |SSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      22% |LLLLLLLLLLL
          EFFICIENCY   11% |***********

5:05  #57 SPEED       10.0 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      35% |LLLLLLLLLLLLLLLLLL
          EFFICIENCY   20% |********************

5:05  #59 SPEED       10.1 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      81% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   46% |**********************************************

5:05  #71 SPEED       11.2 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      53% |LLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   34% |**********************************

5:10  #64 SPEED       10.5 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      64% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   38% |**************************************

5:10  #68 SPEED       10.0 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING      84% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY   48% |************************************************
 TIME TRIP                                ZERO............... 1/2 OF BEST ...............BEST
OF DAY  #                                  <----------- Range of Performance -------------->
====== ==

5:15   #47 SPEED          7.6    SSSSSSSSSSSSSSSSSSSSSSS
           LOADING        91%    LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     39%    ***************************************

5:15   #41 SPEED          8.4    SSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        71%    LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     34%    **********************************

5:20   #18 SPEED         12.2    SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        88%    LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     61%    *************************************************

5:20   #45 SPEED          7.7    SSSSSSSSSSSSSSSSSSSSSSS
           LOADING        43%    LLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     19%    *******************

5:20   #62 SPEED         11.2    SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        54%    LLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     34%    **********************************

5:20   #80 SPEED         11.0    SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        37%    LLLLLLLLLLLLLLLLLLL
           EFFICIENCY     23%    ***********************

5:25   #10 SPEED         11.4    SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        52%    LLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     34%    **********************************

5:25   #17 SPEED          5.7    SSSSSSSSSSSSSSSSS
           LOADING        99%    LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     32%    ********************************

5:25   #30 SPEED          9.1    SSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        69%    LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     36%    ************************************

5:25   #40 SPEED          9.2    SSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        90%    LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     47%    ***********************************************

5:25   #92 SPEED          4.3    SSSSSSSSSSSSS
           LOADING        98%    LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     24%    ************************

5:30   #20 SPEED          8.9    SSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        94%    LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     48%    ************************************************

5:30   #44 SPEED          8.7    SSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        53%    LLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     26%    **************************
```

TRAP SPEED

```
 TIME TRIP                ZERO............... 1/2 OF BEST ...............BEST
OF DAY  #                 |<----------- Range of Performance --------------->|
====== ==                 |

5:30  #56 SPEED       5.8 |SSSSSSSSSSSSSSSSS
          LOADING     32% |LLLLLLLLLLLLLLLL
          EFFICIENCY  11% |***********

5:30  #78 SPEED       9.6 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     39% |LLLLLLLLLLLLLLLLLLLL
          EFFICIENCY  21% |*********************

5:40  #2  SPEED       4.8 |SSSSSSSSSSSSSS
          LOADING     95% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY  26% |**************************

5:40  #22 SPEED       6.1 |SSSSSSSSSSSSSSSSSS
          LOADING     99% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY  34% |**********************************

5:40  #42 SPEED      11.7 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     38% |LLLLLLLLLLLLLLLLLLL
          EFFICIENCY  25% |*************************

5:40  #67 SPEED      10.6 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     37% |LLLLLLLLLLLLLLLLLLL
          EFFICIENCY  22% |**********************

5:45  #93 SPEED       9.8 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     67% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY  37% |*************************************

5:50  #60 SPEED      10.9 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     37% |LLLLLLLLLLLLLLLLLLL
          EFFICIENCY  23% |***********************

5:50  #35 SPEED       8.5 |SSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     72% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY  35% |***********************************

5:50  #36 SPEED       8.8 |SSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     55% |LLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY  28% |****************************

5:50  #37 SPEED      10.3 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     65% |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY  38% |**************************************

5:50  #63 SPEED       9.0 |SSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     53% |LLLLLLLLLLLLLLLLLLLLLLLLLLL
          EFFICIENCY  27% |***************************

5:50  #65 SPEED      11.0 |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
          LOADING     19% |LLLLLLLLLL
          EFFICIENCY  12% |************
```

TRIP SPEED

```
 TIME TRIP                         ZERO............... 1/2 OF BEST ...............BEST
OF DAY  #                           |<----------- Range of Performance -------------->
====== ==                           |
                                    |
8:30   #15 SPEED         12.1       |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        60%       |LLLLLLLLLLLLLLLLLLLLLLLLLLLLLL
           EFFICIENCY     41%       |*****************************************
                                    |
9:35   #66 SPEED         13.3       |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING         6%       |LLL
           EFFICIENCY      5%       |*****
                                    |
10:40  #50 SPEED         15.8       |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        21%       |LLLLLLLLLLL
           EFFICIENCY     19%       |*******************
                                    |
10:45  #49 SPEED         13.2       |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        23%       |LLLLLLLLLLLL
           EFFICIENCY     17%       |*****************
                                    |
10:50  #48 SPEED         14.7       |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        29%       |LLLLLLLLLLLLLLL
           EFFICIENCY     24%       |************************
                                    |
MIDN.  #51 SPEED         17.6       |SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
           LOADING        20%       |LLLLLLLLLL
           EFFICIENCY     20%       |********************
                                    |
___________________________________ | _______________________________________________
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TRIP SPEED